THE RUBBER AGE

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Mileage Guaranties Abolished by Rubber Association

Sweeping Action Ends Drain on Tire Industry

Final Decision Arrived at by Tire Manufacturers' Division of Rubber Association of America on October 27 after over Two and a Half Years of Discussion and Effort—Standard Manufacturers' Warranty and Standard Claim Form Adopted—Manufacturers to Put Entire Plan into Operation at Once

THE announcement by General Manager Viles of the Rubber Association of America on November 14 that leading tire manufacturers had decided to abolish mileage guaranties on tires and hereafter to guarantee only freedom from defects in materials and workmanship embodies what is probably the most important recent achievement of the Rubber Association of America.

This decision was definitely arrived at on October 27 when the recommendations of the Executive Committee of the Tire Manufacturers' Division of the Association to this effect were finally adopted.

A Manufacturers' Standard Form of Warranty and a Standard Claim Form based on the no mileage guaranty policy were adopted at the same time. These forms are reproduced on the following pages.

Tire manufacturers are taking steps to put the entire plan in full force and effect immediately.

The Standard Claim Form is being placed in the hands of dealers throughout the country rapidly, and within a comparatively short time all claims for adjustment will be recorded on these forms.

Coming as it does at a time of drastic reductions in tire prices all along the line—in fact at a time when tires are selling lower than ever before in the history of the industry—the withdrawal of mileage guaranties amounts to an epoch-making change of policy.

For it is to be noted that the cut in prices of from 12 to 20 per cent last spring added to the 15 to 20 per cent reduction this fall makes tire prices in general from 30 per cent to 40 per cent lower than last winter.

SENECA G. LEWIS

Chairman, Tire Manufacturers Division of the Rubber Association of America, General Manager, Pennsylvania Rubber Co., Jeannette, Pa.

This important action has been under discussion by leading tire manufacturers for several years, but the aggressive movement for abolishing mileage guaranties did not take definite form until the organization of the Tire Manufacturers' Division of the Association in January, 1919. George M. Stadelman, Vice President of the Goodyear Tire & Rubber Co., was chosen the first Chairman of this Division, and he was succeeded a year later by John Kearns of the Lee Tire & Rubber Co. Last January Seneca G. Lewis, General Manager of the Pennsylvania Rubber Co. became chairman of the Division. All of these chairmen have been energetic workers for the abolition of the troublesome mileage guaranties and have succeeded in inspiring their associates on the Executive Committee with the desire to bring it about. Mr. Lewis in particular is entitled to credit as chairman of the Division during the present year when the difficult work of lining up the entire industry to agree to this policy has been actually accomplished.

The Executive Committee of the Division is representative of the leading factors in the trade and is composed as follows:

J. C. Weston, Ajax Rubber Co., Inc., 220 W. 57th St., New York.

C. Edward Murray, Empire Rubber & Tire Co., Trenton, N. J.

L. G. Fairbank, Firestone Tire & Rubber Co., Akron, Ohio.

E. H. Broadwell, The Fisk Rubber Co., Chicopee Falls, Mass.

W. O. Rutherford, The B. F. Goodrich Co., Akron, Ohio.

G. M. Stadelman, The Goodyear Tire & Rubber Co., Akron, Ohio.

W. W. Duncan, Hood Rubber Co., Watertown, Mass.

J. V. Mowe, Kelly-Springfield Tire Co., 220 W. 57th St., New York.

John Kearns, Lee Tire & Rubber Co., Conshohocken, Pa.

F. C. Millhoff, The Miller Rubber Co., Akron, Ohio.

C. W. McLaughlin, Mohawk Rubber Co., Akron, Ohio.

Seneca G. Lewis, Pennsylvania Rubber Co., Jeannette, Pa.

J. W. Maguire, The Portage Rubber Co., Barberton, Ohio.

A. G. Partridge, Star Rubber Co., Akron, Ohio.

Thomas F. Walsh, The Swinehart Tire & Rubber Co., Akron, Ohio.

G. S. Shugart, United States Tire Co., 1790 Broadway, New York.

Practically all tire manufacturers have membership in the Division so that action of this kind carries with it the endorsement of the entire American tire industry.

The abolition of guarantees is really only one phase of the movement in the tire industry inaugurated by the Tire Manufacturers' Division for the elimination of many trade abuses which have caused enormous losses to consumers, dealers and manufacturers alike. Many other problems remain to be grappled with, including the ever-present subject of datings.

It is noted with satisfaction by the entire trade that manufacturers and dealers are working in harmony to bring about effective action on the various problems of tire distribution.

As expressed by a manufacturer in close touch with the situation, *the motorist himself who takes good care of his tires is the strongest factor in bringing about economy in tire costs.*

"The motorist," he continued, "who makes a claim for adjustment for any other cause than a defect in workmanship or materials tends to nullify all efforts on the part of manufacturers in the direction of economy in tire manufacture.

"Conditions as they have existed in the trade have placed the tire dealers in the most embarrassing position of losing the good will of their customers, or passing extravagant claims for adjustment along to the manufacturers on whom the necessity of bearing the brunt of these losses has been imposed. In other words there has been a general misconception on the part of the tire-using public as to what has been the responsibility of manufacturers under the mileage guaranty.

"The abuse of the mileage guaranty as well as other abuses that have grown up in the trade increase the cost of tires, and as manufacturers we now feel we are definitely headed in the right direction to rid ourselves of these abuses and the unnecessary losses that flow from them.

"I am glad to say that the National Tire Dealers' Association is heartily in accord with us in our efforts toward the elimination of this and all other trade abuses. While this organization is relatively small in numbers at the present time, its influence potentially is great, and will become tremendously important as it begins to coordinate in its membership the leading dealers from all parts of the country. This association has welcomed the abolition of mileage guaranties as a constructive measure of greatest value to all tire dealers."

The new Manufacturers' Standard Warranty is a revision of the old guaranty and aims to clear up misunderstandings and misconceptions on the part of the public in regard to the responsibility of tire manufacturers. The new Standard Claim Form will succeed in bringing before the tire manufacturers in a uniform manner all claims for defects in materials and workmanship.

This Claim Form, it is hoped, will result in the elimination of so-called "policy" adjustments which have been the bug-bear of the tire industry from its early days and have been the occasion of losses every year running into huge sums. No claims will be considered by manufacturers unless the Standard Claim Form is executed by the tire owner. Hereafter manufacturers will pass on such claims for adjustment only on the basis of the general appearance of the tire and the condition in which it may be returned by the customer.

The Standard Claim Form does not enter into the transaction between the dealer and the consumer at the time of the sale, and is only used when the tire owner may have occasion to present a claim based on defective materials or workmanship. The new Standard Warranty is to be printed on price lists, tags and stickers accompanying tires, etc., in much the same manner as the former so-called guaranty was used. The first two paragraphs of the new warranty as reproduced herewith is the portion covering the change in policy toward adjustments.

As another prominent manufacturer expressed it: "We are now extricated from a vast entanglement of misconception and misunderstanding. Tire users have been getting 'policy' adjustments on all sorts of claims. In the future we do not propose to give adjustments on tires that plainly show stone bruises, rim cuts, wheels out of alignment, tires abused by grabbing brakes and clutch and the myriad other kinds of accident that may happen to a tire. As a matter of fact, we have never theoretically given adjustments in such cases, but in practice—well, that's another story.

"The dealers have been hoping for this action on the part of the manufacturers for a long time. They always wanted to sell tires the same as other merchants sold other lines of merchandise, and not have them subject to replacement in response to claims of their customers oftentimes unjustified.

"The mileage guaranty was a relic of the early times in the industry when a tire was only good for 500 to 1,000 miles. This action brings merchandising methods in the trade up to date."

Manufacturers' Standard Warranty

(Approved by the Tire Manufacturers' Division of The Rubber Association of America, Inc.)

We do not guarantee pneumatic automobile tires for any specific mileage, but every pneumatic automobile tire bearing our name and serial number is warranted by us to be free from defects in workmanship or material.

Tires claimed to be defective will be received only when all transportation charges are prepaid, and when accompanied by this company's claim form duly filled out and signed by owner. If, upon examination it is our judgment that the direct cause of the failure of the tire to render satisfactory service is attributable to faulty material or workmanship, we will, at our option, either repair the tire or replace it for a charge which will compensate for the service rendered by the returned tire, based upon its general appearance and condition.

Pneumatic automobile tires in which a substitute for air has been used, tires used when not inflated to the pressure recommended by us, used under loads in excess of those recommended by us, used on wheels out of alignment, abused or misused, used on rims other than those bearing these stamps ( ), ( ), ( ), or which have been injured through accident or design, are not subject to claim hereunder.

This Company does not authorize any dealer or agent to make any other or additional "Guaranty" or "Warranty."

THE A. B. C. TIRE COMPANY.

From the Dealer's Viewpoint

President Richard F. Valentine of the National Tire Dealers' Association Discusses The Effect of the Withdrawal of Mileage Guaranties

IN response to a request by the RUBBER AGE Richard F. Valentine, of Cleveland, President of the National Tire Dealers' Association, sends us the following statement:

"The action of the tire manufacturers through the Rubber Association of America conforms to some extent with Resolution No. 5 passed by the National Tire Dealers' Association at the recent convention at Cleveland which you will recall read as follows:

" 'WHEREAS, we are all agreed that the present policy of adjustments by tire manufacturers is erroneous, misleading and unfair to the legitimate tire dealer and ultimate consumer, and often used to the disadvantage of the tire manufacturer, therefore be it

" 'RESOLVED, that the manufacturers of quality tires should take prompt action to correct this evil by eliminating the mileage guaranty as it permits the 'snow-bird' or 'gyp dealer,' or 'broker' to prosper unfairly by selling an inferior quality tire with an inflated list price and a long mileage guaranty to the trade at a big reduction from the inflated list price as an inducement to the trade, so when a tire proves defective and a customer returns with it, said dealer informs him that he will make an adjustment, but, of course, that said adjustment will be based on the list price. Therefore, the customer is compelled to accept said adjustment on that basis if he accepts it at all. This enables said dealer to make a profit on the adjustment at the expense of the user, therefore, be it further

" 'RESOLVED, that we believe a quality tire manufactured by a reputable manufacturer and sold by a reputable dealer, needs no mileage guaranty. If the manufacturers do not deem it advisable to remove the mileage guaranty at this time, then we request that all adjustments be made through their authorized dealers who qualify as to their capability, and further be it

" 'RESOLVED, that said adjustments be based on the dealer's cost price of the tire, (and why should not an authorized dealer make his prorated profit on what he purchased as a quality tire but which proved to be otherwise, the same as though he sold a new tire?)

"It is impossible to state at this time just how the present plan may work out, for its ultimate success or failure depends absolutely upon the manufacturers themselves; in short, how they will handle transactions arising in future and which are submitted to them in conformity with their newly prepared claim form.

"There is no doubt in my mind but that the past method has been decidedly unfair, in that it has allowed and encouraged abuses on the part of all three factors concerned in the life of a tire, the manufacturer, the dealer and the consumer. Take the consumer's end first. I have always felt that it is manifestly unfair to guarantee a tire to the consumer on a definite mileage basis irrespective of the car on which the tire is used. In other words, a tire used on a commercial truck certainly should not be expected to give the same mileage as one used on a light passenger vehicle, which has caused the man driving the passenger vehicle to pay the bills of the truck owner. Further, there are no real scientific methods of determining tire mileage, which has encouraged the consumer when asking for adjustment invariably to understate the mileage obtained, which is not conducive to the upbuilding of confidence between the consumer and the dealer.

"The dealer, on the other hand, has had a prescribed allowance on adjustments which never did justly compensate him in that it required considerable effort invariably to make an adjustment satisfactorily as compared to selling a new tire, and caused him to get into the consumer's habit when referring the tire back to the manufacturer, also to understate the mileage obtained.

"Furthermore, the dealer has never felt that he should be expected to base his adjustments on list prices. In fact as borne out by the resolution passed, dealers went on record as stating that adjustments should be based on

This space is to be filled in with the name and address of tire manufacturer

STANDARD CLAIM FORM

Pneumatic Automobile Tires

(Approved by the Tire Manufacturers' Division of The Rubber Association of America, Inc.)

Read this claim form carefully before filling it in and affixing your signature.

(DATE)

(Name of person or firm to whom claim is presented)

(Address)

I/We have carefully read the "Manufacturers' Standard Warranty" (as shown on the reverse side of this sheet) under which the tire described below and herewith returned was purchased, and I/We submit the following information in support of this claim:

Name and address of person or firm from whom tire was purchased

Date of Purchase ..... Size ..... Serial No. .....

Place check opposite proper designation for the tire returned for consideration; if of type other than named, describe opposite "Misc."

- Straight-Side Fabric .....
- Straight-Side Cord .....
- Clincher Fabric .....
- Clincher Cord .....
- Misc. .....

Date Tire was applied ..... Date Removed .....

Name of car on which tire was used ..... Car Registration No. .....

Description of alleged defect in workmanship or material:

The following additional information is submitted in support of this claim:

I/We hereby certify the foregoing statement of facts to be correct.

(Signature of Owner)

(Address)

Photographic Reproduction of Standard Claim Form to be Used by Tire Owners Seeking Adjustments for Defect in Materials or Workmanship.

(See Opposite Page for Standard Warranty)

dealer's cost price of the tire, and that he should be allowed to make his pro-rata profit the same as on a new tire, which appears to me to be perfectly just, for the onus of turning out a poor product should fall upon and be borne solely by the producer.

"The manufacturer's side has not always been judiciously handled in that innumerable cases are on record where the dealer has quoted the customer an adjustment figure, using his best judgment and the customer not being satisfied has taken it direct to the manufacturer's branch, with the result that the branch adjuster having considerably more leeway to work upon than the dealer, would give the consumer very much more attractive adjustment figures, which has led to the loss of confidence in the dealer and practically to ignoring him in many localties when the question of adjustments on tires has come up with the consumers.

"Further, I know it to be a fact that many tires that have been worn out and have given excellent service, have been sold for junk, have been sorted out by the junkman and any number of them referred back to the manufacturers for adjustment, forming a source of supply to illegitimate and unscrupulous merchants.

"I trust that a great many of these abuses will be eliminated by the abolition of tire mileage guaranties, and the necessity of making out a claim form by the individual tire user when he feels that the merchandise he has purchased is defective.

"But as before stated, the success or failure of the new plan in my estimation depends in the main, upon how the individual manufacturers will handle such cases as come to them for consideration. The dealer of course can and should assist in every possible way to see that nothing but the absolute facts are transmitted, and assuming this to be the case I feel that such transactions should assure the consumer just consideration and also the proper margin of profit to the dealer and the dealer not be expected to assume part of the manufacturer's responsibility.

"The National Tire Dealers' Association stands pledged to cooperate in every possible way with the manufacturers to the general betterment of the tire industry, and anything the officers and members of the association can do toward the consummation of this pledge, you may rest assured will be done."

Mr. Valentine is head of the Valentine Rubber & Supply Co., 7701 Carnegie Avenue, Cleveland.

Safe Handling of Volatile Liquids In Factories

Report of Engineering Committee, Rubber Section, N.S.C.,
C. B. Mitchella, B. F. Goodrich Company, Akron, Ohio, Chairman

THE principal volatile liquids used in rubber factories are gasoline and benzol. These are considered in various rules and regulations on flammable liquids as being in class No. 1, which covers liquids of lowest flash point. The discussion will be confined to the handling and uses of gasoline and benzol. The usual handling and uses of these two liquids are as follows: Receipt in tank cars or small containers; storage; distribution through factory; cement mixers; spreading and cement dipping; washing and cleaning stocks in process of manufacture.

The discussion on handling these solvents will be brief, because it is very thoroughly discussed and recommendations given in the National Safety Council's Safe Practices pamphlet No. 34, entitled "Industrial Explosion Hazards", also in the regulations of the National Board of Fire Underwriters, and in the pamphlet entitled, "Installations for Handling Gasoline and Similar Oils," issued by the Inspection Department of the Associated Factory Mutual Fire Insurance Companies. Only recommendations on methods not covered by the above pamphlets will be presented. Cements and other materials containing solvents are too numerous for discussion here, so all materials other than rubber cement will be omitted.

Thawing Frozen Benzol in Tank Cars

Recommendations for receiving and unloading railroad tank cars are presented very completely in the regulations of the Bureau of Explosives in their folio No. 25-16-242-2. One important point, however, is not covered in their recommendations, viz., the thawing of frozen benzol in tank cars before it can be discharged into storage tanks. Evidently there is no method in use which may be considered entirely free from fire and explosion hazards. Perhaps the best method is to run the car into a heated shed constructed of fireproof materials, and with a roof which will easily be lifted without undue damage from any explosion that may occur. The tank car is heated by passing air through steam coils and delivered by a fan, located in a separate room, to the ceiling above the car, and thence downward over the car to the floor and outward through openings in the walls at the floor line to the outside air. This circulation will free the shed from gases which may lie upon the floor. The heated air should not be recirculated, as this may build up an explosive mixture. This method seems preferable because the circulation of air produces perfect ventilation, while furnishing sufficient heat to thaw out the frozen liquid. Thrusting hot steam coils down into the frozen tank of benzol will produce explosive vapors very rapidly and is a very dangerous operation. There have been tank cars fitted with steam coils within the tank, but these coils could not be kept in good repair, and the plan has been abandoned.

Concrete Pit under Tank Car Unloading Tracks

It is recommended that a concrete pit be constructed under the railroad track where a tank car will stand while being emptied, so that in case of not being able to make a proper connection to the outlet underneath the tank, the contents or leakage will drop into the pit instead of flowing over the surrounding territory. From this pit there should be a sufficiently large pipe discharging into an underground tank of a capacity as great as the tank car. Proper construction of underground storage tanks and methods for storing in metal containers are very well specified in the above mentioned pamphlets.

Distribution Pumps for Underground Storage Tanks

The safest method is to store these liquids in underground storage tanks and distribute from these tanks by pumps through pipes leading directly to points of usage. The underground storage tanks should be at the lowest points of the entire system, and all pipe mains should be laid to drain back to the top of these tanks. An extra drain tank with by-pass connections should be provided for draining the mains; so that if the main storage tanks are full or if there may be a break in one of the underground lines which would carry back sediment, the liquids may be drained into this extra tank. There should be no gravity feed from the storage tanks to any point of distribution, for in case a break or leak occurs in one of the mains, the entire contents of storage tanks might easily drain away.

The pumps should be located above the storage tanks. If there is more than one solvent or oil to be distributed, there should be a pump for each to reduce contamination and also a spare pump to care for breakdowns or other emergencies, and the valves and headers controlling the pump distribution should be so arranged that any pump may distribute any one of the liquids. The pumps should be set a sufficient distance above the floor of pump room so that sparks resulting from

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any friction of pump bearings, etc., will not ignite the heavy gases lying on the floor.

The Motor Room

The motor and controls should be in a room separated from the pump room by a fire wall, the motor being preferably directly connected through this wall with a stuffing box or packing around the shaft to close the opening in the wall. A pressure regulator should be provided so that the maximum pressure carried in the mains will slightly exceed that actually required to distribute the liquids at the highest point of the system. This regulator ought to be constructed with electric switch, so that the pump will stop when the maximum pressure is reached. A signal system in the pump room to show which draw-off valve has been opened will assure the engineer in charge that it is proper for the corresponding pump to be in operation. Instances have been cited where a faulty electric connection has caused a pump to start, which produced a pressure in the mains or a circulation through the by-pass to such an extent that the motor seriously overheated. This might have gone on to the extent of burning out the motor or breaking one of the pipe lines, with consequent fire hazard.

Distributing Mains

The distributing mains to outlying draw-off stations should be buried underground below frost line in a bed of sand with slabs of concrete or stone above to prevent the pipes being broken by an uninformed workman making excavations. Benzol, which freezes at 42 deg. F., should have its pipe mains insulated. This is probably most simply accomplished where most extreme temperatures are not encountered, by enclosing the main within another pipe, allowing sufficient air space around the main. Where the solvent mains are located within buildings, suspended to ceilings or risers to upper floors, each main should be enclosed within another pipe, so that any leakage in the main pipe will be carried by this outer pipe into sand pits outside of the building.

Each draw-off at outlying stations should be operated by a remote control valve, fitted with an electric switch, so that when valve is opened, the corresponding pump motor will start. The valve ought to be constructed so that it will close when workman removes his hand from handle, and so that the handle cannot be blocked or tied open. An automotic stop device may also be arranged in conjunction with a registering meter, so that at the option of the workman any pre-determined quantity can be discharged, and then the flow be automatically stopped. This device is especially desirable where solvent pipes are directly connected into tanks or mixers.

It is recommended that solvents used in mixers or similar equipment be carried directly into the equipment instead of drawing off the liquid into small containers. Where it is necessary to draw off solvents in small containers, the draw-off valve should be located within a fireproof enclosure, with an automatic closing fusible link controlled door and steam jets inside for smothering a fire. A sheet metal cabinet will make a very satisfactory and light weight enclosure and can easily be placed outside of the main building wall, if desired. The floor of this enclosure should be fireproof and drained into a sand pit outside of the building, and should always be free of trash and cotton waste.

Cement Mixers

Cement mixers should be operated preferably by a gear drive and not by transmission belts, which cause static sparks. The mixer tanks should be tight, so as not to leak the liquid or gas, with the exception of an air vent leading to a point above the roof. The feed openings should be fitted with quick opening and closing doors. The openings into mixer tanks should not be left open when this equipment is not in use. Cement drawn from mixers should be placed in closed vessels. Cement is often placed in open tanks where articles are dipped into the cement and then placed in racks to dry. These open tanks shou'd be placed within fireproof enclosures or cabinets with fusible link control doors. There should be plenty of ventilation from the surface of the cement to draw gases away from the workmen. The dry racks should be placed in a fireproof room with plenty of ventilation to carry away gases at the floor and explosive mixtures.

Gasoline and benzol are often kept in open vessels, such as tin cups, on work benches to be used for washing and cleaning stocks and for various other purposes. These vessels should be covered with a self-closing tight lid. Usually at the end of a work day or week, there remains a considerable quantity of solvent or cement in small containers, and it may not be possible or advisable to return them to the storage tanks. These containers should be stored in a fireproof room or preferably, in an outside shed, and not allowed to remain in the factory work rooms.

Solvent Recovery

Solvent recovery is carried out in a variety of ways in the rubber industry, among the most common being:

(1) Direct condensation by cooling.
(2) Condensation by compression and cooling.
(3) Absorption of vapors in proper absorbing agent.

The difference in handling solvent vapors when they are to be recovered and when they are not should be carefully noted. Where solvent vapors are to be recovered with greatest economy, the vapor concentration must be as high as possible, since the higher the concentration the higher the percentage of recovery. Where solvents are not recovered the very minimum vapor concentration will assure less fire and explosion hazard.

The great hazard in solvent recovery is due to the fact that the highly concentrated vapors are gathered in an enclosed vessel, and sufficient air leakage into the vessel will form an explosive mixture with disastrous results.

Condensation

Direct condensation by cooling is used principally on small equipment where impregnating is done in a small enclosed vessel, and where little solvent is required. The vapors are drawn from the vessel by a pump and forced at low pressure through coils cooled by water or ice.

Condensation by compression and cooling is probably most widely used. This method consists in enclosing the impregnating equipment in a tight compartment through which the fabric passes. The solvent vapors are drawn off by a compressor, which increases the pressure to such a point that little of the vapor remains after the compressed gas is cooled. In some installations, gas, which will not support combustion, is drawn into the compartment and allowed to pick up the solvent vapors before passing on to the compressor and cooling coils. This gas is usually made in gas producers. There is a hazard in this type of equipment because the concentration of the gaseous vapors is high and air leakage into the vessels will form explosive mixtures. Within the last year two explosions of this nature have occurred, one of which resulted in the death of two men.

Absorption of Vapors

Absorption of vapors in oil is accomplished by passing the solvent vapors through a petroleum oil of proper gravity. By redistillation the solvents can be recovered. This method is not so hazardous as those in which the gas is compressed.

The greatest precaution in solvent recovery is to maintain a vapor with a saturation considerably above or below the explosive range, and not permit air to mix with the vapors and build up an explosive mixture.

Fireproof Rooms Essential

It is essential that all equipment handling gasoline, benzol or rubber cements be housed in fireproof rooms. These rooms must be ventilated by supplying fresh air and exhausting gas-laden air from the floor surface. Usually a pressure can be set up by forcing air into the room and allowing it to escape with any gases through openings in the walls at the floor line and above outside grade. All door sills should be raised sufficiently to prevent the flowing of any liquids that may be on the floor to other rooms or areas.

Floor Drains

Floor drains as well as drains from mixer tanks, etc., must be provided to carry away the liquids as rapidly as required by building codes and insurance regulations. These drains should be carried to a cistern with the entering pipe below

water level. Recommendations for construction of these cisterns are given in the pamphlets previously mentioned.

Fire Extinguishing Equipment

It is important that plenty of fire extinguishing equipment be placed in rooms where flammable liquids are used. It is sometimes advisable to install a water sprinkling system within such rooms with the pipes dry inside of the room and controlled by a quick-acting valve placed outside of room. This would prevent water from the sprinkler heads flooding the floor and carrying volatile liquids to other areas, and it would also allow the water to be turned on if advisable. Sufficient hand extinguishers, etc., should be provided for small fires. Perhaps the best method of extinguishing fires from these liquids is by steam quenching, but this cannot be accomplished except in a tightly enclosed room. A worthy scheme for closing the windows and doors automatically is by fusible links which also open the steam valve. Another excellent extinguisher distributes foam which contains an inert gas. This foam forms a blanket over the burning and flammable materials. A quantity of sand, soapstone or other nonflammable material should be placed in such rooms for absorbing liquids which might othewise flow to other areas.

While it is positively compulsory to prohibit fires and sparks near solvents and cements, it must be admitted that hazards resulting from their presence are due in a great measure to equipment and poorly designed housing. Proper equipment would handle these volatile materials in tightly enclosed vessels with no openings for contact with sparks, and providing proper workroom ventilation to avoid explosive mixtures.

Mineral Rubber

By C. Olin North

Research Dept., Goodyear Tire & Rubber Co., Akron

MINERAL RUBBER, or MR, as it is known in the trade, belongs in the great class of asphaltic products. The first MR to be placed on the market in England several years ago, was a variety of natural asphaltic pitch; later, it was found that the combination of this and similar substances, with the harder bitumens such as gilsonite, gave a product more in demand by the rubber industry.

Experimental

Materials.—The rubber used was a carefully selected pale crepe of excellent quality. The MR was prepared from mid-continent asphalt residue and gilsonite by the usual blowing procedure; ash 0.5 per cent; softening point 180-200 C.; penetration 70 to 90; acetone soluble, maximum 55 per cent. The carbon black, zinc oxide, and barytes were standard high quality materials.

Formulas.—The stocks, with but one exception, consisted solely of rubber, sulphur, and the material under test, and the sulphur ratio was 10 per cent on the weight of the rubber. Fillers such as MR, carbon black, zinc oxide, and barytes, were added in definite volume ratios to 100 volumes of rubber. The exception was in connection with Resilience, where for the purpose of comparison, a base formula of 100 parts pale crepe, 5 zinc oxide, 6 sulphur, 3 thiocarbanilide, was taken.

Curing.—Sheets 2 mm in thickness were vulcanized at 2 minutes 30 seconds; 2 minutes 45 seconds, 3 minutes; 3 minutes 15 seconds; and 3 minutes 30 seconds at 141 C., in a standard hydraulic press.

Testing.—Complete stress strain curves were obtained on a Scott testing machine by the two observer method. Permanent set data were secured by the modified Davies-North method, which consists of three stretches to 60 per cent of the ultimate elongation, holding 3 minutes for each stretch, with one minute interval between; measuring 10 minutes after the third release. Abrasion tests were made with a rough carborundum wheel, rotating at 20 revolutions per minute.

Penetration tests were run on a simple apparatus which consists essentially of a platform mounted on a rod. The contact point is a sphere 9.5 mm in diameter. A load of 4500 grams is applied, and the penetration of the ball into the rubber in one minute is read off in hundreths of a millimeter. Elongation-under-constant-load experiments were performed by suspending test pieces which varied within 5 per cent in cross section under loads of one and three kilograms.

Discussion of Data

Stress Strain Data.—The following observations may be made:

1. At low elongations, MR is without stiffening effect.
2. Up to 600 per cent elongation, the individual stress-strain curves show hardly any increase in load, but beyond this point, the curves take a sharp right angle bend. This is characteristic of pure gum stocks.
3. The load at break, increases up to 7 volumes of MR, and then falls off slightly. The slight falling off indicates that MR is without overloading tendencies.
4. Tensile at break (corrected to area at break), accentuates the desirable properties of MR. The range of greatest efficiency is from 3 to 15 volumes, and the maximum is reached at about 7 volumes of MR to 100 volumes of rubber.

The conclusion from these curves is that MR is small quantities, certainly to 10 and for many purposes 15 volumes to 100 volumes of rubber, has a beneficial effect on rubber. Beyond this point, it behaves as a diluent, but a harmless one so far as the stress-strain curve is concerned.

Ultimate elongation.—At 2 minutes 45 seconds / 141 C., a slight decrease with increase in MR is indicated.

Energy Input.—The hysteresis loops were run to a constant load of 20 kg. / cm^2. By measuring the area under the up curve, and converting it to energy units of kilogram-centimeters per cubic centimeter, the energy input is obtained. This corresponds to Wiegand's Energy of Resilience, but is limited to the lower portion of the curve. The energy input, or capacity to absorb energy, shows a maximum at 7 volumes of MR, beyond which there is a gradual falling off. An interesting feature is the slight difference between the curves for the 1st and 6th loops—with carbon black or zinc oxide, the difference is quite marked.

Hysteresis Loss.—The hysteresis loss is based in per cent on the energy input. These losses for MR are straight line functions and show a slight increase with increase of MR. The curves for gas black and zinc oxide are also straight lines, but much steeper.

Permanent Set.—By permanent set, we mean irreversible flow, whether it be plastic, or merely due to change in position of the particles of filler. The test employed in these experiments was purposely designed to measure irreversible flow.

The stretch was placed at 600 per cent of the ultimate elongation because it was found that most compounds could be repeatedly stretched to this elongation without having them develop flaws and fail prematurely. There is a peculiar relation between permanent set and hysteresis loss as measured in this experiment. In both of these tests, adequate time for plastic flow is provided. The curves of hysteresis loss and permanent set are practically straight lines. It is not improbable that both tests measure the same thing. It is becoming more and more apparent that a machine is needed which will give accurate hysteresis loops, automatically

Abstract of paper read before the American Chemical Society, Rubber Division, in New York, September 7.

graphed within very short intervals of time. This is no more than what actually goes on in a tire on the road.

Resilience.—This term was first applied in rubber testing by W. B. Wiegand. It represents the energy which has been absorbed or put into the test piece on being stretched to the point of rupture, and is determined by measuring the area between the curve and the elongation axis. The gas black curve is a straight line up to 20 volumes. The MR curve is somewhat different; up to 5 volumes, it is a straight line, showing that within these limits it increases the energy absorption capacity. Beyond this point, there is a slight falling off; the remainder of the curve is a straight line. This is another illustration of the peculiar inertness of MR when employed beyond the point of its maximum efficiency. As far as the writer can determine, the only evidence of its presence in large quantity is in a slight raising of abrasion loss and the logginess which will be discussed later.

Abrasion.—With increased MR content, the abrasion loss increases.

Penetration.—Penetration tests show that there is little, if any, change in the hardness of stocks with increase in MR.

Rate of plastic flow.—From the data obtained when the test pieces were suspended under a load of one kilogram, the following conclusions may be drawn.

1. Average of all the rates determined over 43 hours show about double the pure gum velocity for all stocks containing MR.
2. After 43 hours suspension, the flow is very small.
3. One minute velocities show gradual increase with increase in MR up to 20 volumes, when its filling effect retards the rate.

The experiments with three kilograms load were carried only to one hour. Owing to the increased elongation, the conclusions that may be drawn are somewhat different from the above:

1. The average of all the rates determined within the hour show a gradual increase with the increase in MR.
2. A very decided increase in rate of extension with 3 kg. load in one minute is shown. At 40 volumes of MR, the pure gum velocity is more than trebled.

The rate of plastic flow appears to be quite susceptible to temperature changes.

Recovery.—The flow of MR is reversible, i.e., it behaves as a true supercooled liquid. The test pieces used in elongation under constant load, were measured at intervals after the recovery noted. The following conclusions are in order:

1. Load of 1 kilogram; time 24 hours.
   (a) The average rate of recovery shows about the same values for pure gum stocks, and those containing 5 and 10 volumes of MR. For 15, 20, and 40 volumes of MR, the rate is appreciably decreased.
   (b) Proportional recovery as shown by one minute readings, based on pure gum, shows no change until 15 volumes of MR is reached, when it drops to about 75 per cent of that shown by pure gum.
   (c) Proportional recovery for the entire 24 hours shows the same recovery for MR stocks as for pure gum.
2. Load 3 kilograms, time 1 hour.
   (a) The average of six readings during one hour shows about the same rate of flow for pure gum, and for stocks containing 5 volumes of MR. For 15, 20, and 40 volumes, the rate shows an increase with increase in MR.
   (b) The proportional recovery over one hour is only 66 to 85 per cent of that shown by pure gum.
   (c) A similar conclusion may be drawn from the two minute readings. The 5 volume MR and the pure gum have the same proportional recovery, but the others are considerably lower. Had a minute reading been taken, there would have been a greater contrast.

The general conclusion from these experiments is that MR does not greatly retard the ultimate recovery. However, it introduces a time factor in that the "come-back" within the first minute or two after release, is considerably retarded when over 15 volumes of MR is introduced. In other words, MR being a viscous or supercooled liquid, flows with the rubber when strained, and is forced back by the contraction of the rubber when released. To use a common illustration, it behaves like a door check; it only appreciably prevents ultimate recovery, but it has a decided damping effect on immediate comeback. It is because of this property that loaded stocks containing MR are frequently loggy or sluggish. In many cases, this is a serious defect. For example, consider a high MR solid tire tread. In service, it receives shocks of more or less magnitude all the time. If the speed is such that the tire cannot regain its original contour from blow to blow, the effect is to strain the stock in progressively increasing amounts until the elastic limit is approached, and failure begins. Such a tread flattens down, cuts, and gives very low life. In pneumatic tire treads, high MR produces logginess which in turn causes tread separation and excessive wear.

This is the chief criticism of the MR of today. If it were possible to alter its physical properties so as to eliminate the tendency to produce logginess, there is little doubt that such a mineral rubber would be more extensively employed, and in larger quantities.

Repairing Pneumatic Tubes

German Patent No. 339,810 is concerned with a process of improving and making tight injured parts in automobile tire tubes and of connecting rubber parts by means of heat and pressure with the aid of a solution of rubber. The united pieces of rubber form one solid piece just as if they had been made originally out of the same piece of rubber. The rubber parts, after the raw rubber mucilage that has been smeared on them has dried somewhat, are pressed together, and heated very gradually to a temperature of 115 to 130 degrees C. Then they are cooled in water without pressure until the rubber begins to sweat. The raw rubber solution is made by dissolving small pieces of the same in benzine and stirring the solution so long until it becomes mucilagenous.

For example if it is desired to repair an automobile tube, which has a flaw in the rubber, that spot is cleaned thoroughly with benzine and then the mucilagenous rubber solution is smeared on and allowed to dry to some degree. Then the rubber patch is pressed on slightly and the tube is placed in a press where it is subjected to heat and presure. Then the pressure is released and the tube is cooled to 15 degrees C.

The Schob Pendulum for Testing the Elasticity of Rubber

The usual method of testing the elasticity of rubber consists in allowing a metallic ball to fall from a certain vertical distance on to the sample of rubber and measuring the rebound. The inconvenience of this method lies in the fact that it is very difficult to tell exactly how far the ball rebounds. This is a measurement which it is hard to determine without any great degree of accuracy for obvious reasons.

In Germany after the introduction of methyl rubber (synthetic rubber) it became very necessary to be able to determine accurately the elasticity of rubber, when it was submitted to shocks such as occur in a heavy vehicle travelling over rough roads. It was found that when certain substances were added to this rubber, which had to be done to give it the required elaticity, the product behaved in a manner which was very much like that of real rubber, when the force that it was compelled to undergo was applied in a relatively slow manner, while when the force was applied rapidly, then the methyl rubber remained dead or inert.

A. Schob has devised a suspended hammer working as a simple pendulum and provided with a shock weight of 200 grams, the height of the rebound being indicated by a pointer fixed on the hammer. The apparatus is used with the work of the falling weight equal to 5 kilograms per centimeter and the elastic efficiency is determined in percentage of the work expended. The samples of rubber used are 6 millimeters thick and 36 millimeters in diameter. Before making the test the samples are very carefully coated with talc. The standard temperature at which the test is arranged to take place is fixed at 20 degrees C. about room temperature. This is important and the tests must take place all of them at the same temperature.

New Investigations into Accelerators

The Relation Between the Sulphur Coefficient and the Physical Properties of the Vulcanized Product

A. Bencke

From the Gummi Zeitung

The peculiarly variant behavior of aniline on the one hand, and of diphenyl-thio acids on the other hand, when they are used as accelerants of vuleanization whether in the presence or absence of zinc oxide, has been investigated recently by the American chemists G. D. Kratz, A. H. Flower and J. B. Shapero of the Falls Rubber Co., of Cuyahoga Falls, Ohio. The results that were obtained in the researches were very interesting. As is well known aniline is a very effective accelerator of vulcanization in the absence of zinc oxide, while the action of the diphenyl-thio acids is very slight when zinc oxide is not present. On the other hand when zinc oxide is present their accelerating action is quite considerable. Under these conditions, however, not only is the quantity of sulphur which is taken up by the rubber affected very essentially, but also the physical properties of the vulcanized rubber, according to the duration of the treatment. Consequently it appeared to be well worth while to undertake to establish the relation between the sulphur coefficient and certain definite physical properties, by using representative rubber mixtures, which are accelerated by one tenth of a gram molecule of either aniline or diphenylthio acid. It was thought that these experiments would lead to practical results of great importance. For this purpose six of such representative rubber mixtures were used. They were vulcanized in a series of treatments under different conditions in order to compare their behavior. The duration of the vulcanization was from 30 to 240 minutes. The various mixtures used were as follows:

1. Rubber—Sulphur, as a control.
2. Rubber—Sulphur—Aniline.
3. Rubber—Sulphur—Diphenyl-thio acid.
4. Rubber—Sulphur—Zinc oxide, as a control.
5. Rubber—Sulphur—Zinc oxide—Aniline.
6. Rubber—Sulphur—Zinc oxide—Diphenyl-thio acid.

The proportions of the different constituents, used in these various mixtures are given below in the table.

Substance	*Mixture*					
	1.	2.	3.	4.	5.	6.
Rubber	100.00	100.00	100.00	100.00	100.00	100.00
Zinc oxide			100.00	100.00		100.00
Sulphur	8.10	8.10	8.10	8.10	8.10	8.10
Aniline		0.93		0.93		
Diphenylthio Acid					2.28	2.28

The quantities of aniline and diphenylthio acid, which appear in the above table, correspond to a tenth of a gram molecule of the substances for every hundred grams of rubber in the mixture. The different mixtures were vulcanized at a temperature of 141.5 degrees C for various durations of time up to 240 minutes. The sulphur coefficient and the physical properties of the vulcanized products were determined for each mixture. Mixtures one and four were used as controls and the basis of comparison in both series of tests.

It was found that in mixture 2, the aniline acted not only as a strong accelerator (the sulphur coefficient was 6.268 in 2 against 3.751 in 1 for a 240 minute duration of vulcanization) but that in addition thereto the tensile strength and the resistance to breaking of the vulcanized rubber, obtained from mixture 2, was considerably better than that obtained from the mixture 1. On the other hand, the presence of zinc oxide in the mixture 4 was found to be unessential as far as the sulphur coefficient with respect to the mixture 1 is concerned. After the vulcanization process had lasted 240 minutes, it amounted to only 3.615, but when the vulcanization did not last so long, it was found to be somewhat higher than in the straight rubber-sulphur mixture. The sulphur coefficients of the mixture 5 were, to be sure, higher than those of the mixture 4, but on the other hand the maximum tensile strength of the mixture 2 (2670 pounds per square inch), which was attained at a temperature of 180 degrees C, was reached in the case of the mixture 5 at the temperature of 90 degrees C and overstepped as well (2808 pounds per square inch). The sulphur coefficient, which corresponded to this tensile strength, was only 2.801 in comparison with 3.351 in the case of the mixture 2.

As far as the mixture 3 is concerned, it was found that in a straight rubber-sulphur mixture the influence of the diphenylthio acid was considerably less than that of the aniline, and this holds good, to be sure, not only with respect to the sulphur coefficient but with regard to the physical properties of the vulcanized rubber as well. The resistance to breaking and the extension were essentially the same as in the control mixture 1, but the sulphur coefficient was increased only slightly with respect to the mixture 1 and amounted to that of the mixture 5 approximately; consequently it was considerably lower than that of the mixture 2. In the end the highest sulphur coefficient was given by the mixture 6 (7.709, when the vulcanization process lasted 240 minutes). The maximum tensile strength, viz, 2730 pounds per square inch, was only a little greater than that obtained with the rubber from mixture 2; however this was attained at a temperature of 90 degrees C, and as the temperature increased, it decreased, until it was 754 pounds per square inch for a vulcanization period of 240 minutes.

The comparison that was made between mixtures 3 and 5 was very interesting. If only the sulphur coefficients were taken into account, then it was found that the influence of aniline in the absence of zinc oxide was considerably greater than when it was present. Furthermore the comparison between the mixtures 3 and 6 showed that the diphenylthio acid was almost twice as effective, when the zinc oxide was present. When the curves were drawn to show the relation between the temperature and the sulphur coefficients, the conditions, under which there appeared to be evidences of the formation in the mixture 6 of new and more effective accelerators than either the diphenylthio acids or the decomposition products of the same, were established. It is not improbable that certain zinc salts of a dithio-carbamic acid were formed in this case from the reaction of these decomposition products with zinc oxide in the presence of sulphur.

In general it may consequently be said for the first time, basing our conclusions on this new series of investigations that in a straight sulphur rubber mixture the accelerating influence of aniline was considerably greater than that of the diphenylthio acids, both with respect to the sulphur coefficient as well as from the standpoint of the physical properties of the vulcanized rubber; but in the presence of zinc oxide just the reverse was true. Further more it may also be established that in the mixtures which contained zinc oxide the increase in the tensile strength was more rapid, when diphenylthio acid was used than when aniline was the accelerating agent; but, in both cases the maximum attainable tensile strength was the same. The same thing holds good for the sulphur coefficient, with the exception that there was a slight variation in the same in favor of the diphenylthio acid. While the maximum attainable tensile strength of the rubber-sulphur mixture, which was accelerated by means of aniline was the same as when zinc oxide was present, nevertheless this maximum was reached at a considerably higher corresponding sulphur coefficient. But if zinc oxide had been present, then it appeared that both in the case where aniline was used and where the accelerant was diphenylthio acid—and particularly in the latter instance—the tensile strength was increased quite considerably during the first stages of the vul-

canization operation at very small corresponding sulphur coefficient. From this it was deduced as an apparent possibility that it would be possible to improve the physical properties of the vulcanization mixture without being forced to increase the sulphur coefficient to any great extent.

This point was of great importance as it showed that in the case of mixtures, which contained zinc oxide and a strong organic accelerator, the correct, which means the best vulcanization, in comparison with mixtures which were not accelerated, was obtained with very low vulcanization coefficients. The explanation of this must lie in the formation of very unstable zinc salt during the course of the vulcanization of such mixtures. These complex zinc salts must contain diphenylthio acid as well as zinc oxide. The improvement in the physical properties of the mixture was not to be attributed to the zinc part of these salts, entirely irrespective of the accelerating influence of the salts in question. Particularly in that case, where high sulphur coefficients occured during the various stages of the vulcanization process and where aniline in conjunction with zinc oxide was used as the accelerating agent, zinc oxide was the substance to which there must be assigned the improvement in the physical properties of the vulcanized rubber. If in place of aniline diphenylthio acid were used, then the contrary was true.

Apparently this compound was decomposed by the zinc oxide and in this manner it was transformed into a stronger accelerator, or the zinc oxide formed with the decomposition products zinc salts, which were the cause of the increase in the sulphur coefficient as well as in the tensile strength of the vulcanized product. In the case of aniline such a salt did not appear to be formed.

In a few words the important conclusions that were derived from this research are that in a straight rubber-sulphur mixture the influence of aniline as an accelerator of vulcanization is greater than that of a molecular equivalent of diphenylthio acid; that in the presence of zinc oxide the reverse is true; that in the use of aniline as an accelerator of vulcanization the same tensile strength is attained with higher corresponding sulphur coefficients in the absence of zinc oxide; that both aniline and diphenylthio acid in the presence of zinc oxide show a rapid improvement in the tensile strength in the lower stages of vulcanization; that this tensile strength is attained with approximately equal sulphur coefficients; finally that there is apparently no general relationship between the sulphur coefficient and the physical properties of the vulcanized rubber.

"National" Service to the Rubber Trade

The great development that has taken place during recent years in the use of organic compounds during the manufacture of rubber, has led to intensive research by the chemical experts of the National Aniline & Chemical Co., Inc., and the results of their scientific investigations and findings have now been crystallized by the establishment of a rubber laboratory in charge of a well qualified rubber chemist.

This new "National" service will be of the greatest interest to the scientific staffs already maintained by many of the larger factories and its cooperation for consultation and advice will always be available, and also it should prove particularly useful to those companies that do not maintain extensive technical laboratories. Through it the "National" is enabled to present products that are definitely standardized and especially adapted to rubber compoundings. Uniformity and standardization of organic compounds are of vital importance to the rubber chemist.

Through this service may be obtained suggestions and advice relative to the use of "National" products in particular compounds and the experience of the expert rubber chemists of the "National" is thus made available for analysis and constructive work which should result in improvement in the quality and serviceability of the finished merchandise.

For example, a tire has several different compounds in its structure. Frequently these are not balanced as to curing properties. No more valuable service can be given than the balancing of these various components to get uniform vulcanization in the finished tire. This involves the use of catalyzers and determination of their relation to the amount of the vulcanizing agents used.

The improvements in vulcanization, quality and finished product made possible by such a service justifies its introduction as a new factor in the industry.

Permanent Elongation of Rubber Articles

E. L. Davies determines the permanent elongation of rubber samples in this manner. Ten samples are taken and loaded until they break. Then ten other samples are loaded to give about 60 per cent of that elongation. At the end of ten minutes the load is released. This operation is repeated three more times. Each time ten minutes are waited before the sample is tested again. The permanent elongation may be observed at the end of each of the four extension tests. The principal effect is produced in the first.

Synthetic Rubber

Danish Patent No. 24,565 is concerned with the manufacture of a synthetic rubber from resins. The resins or residues from the distillation of resins are melted together with chloride of calcium. The mixture is subjected to a continuous distillation, and during the progress of the same chloride of calcium and chlorinated lime are added in small amounts but continuously. The mass that is obtained resembles rubber very much. It is mixed with crude rubber either new or regenerated, and then vulcanized. A number of other fillers may be added as well.

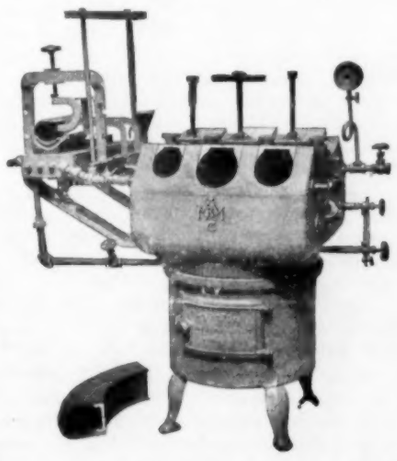
Akron Rubber Mold Vulcanizers

The improved Type A vulcanizer equipment for tire repair manufactured by the Akron Rubber Mold & Machine Co., Akron, Ohio, illustrated herewith, has been redesigned so as to vulcanize cord tires as well as fabrics. It is a three-cavity outfit, with self-contained steam boiler, tube plate and inside patch vulcanizer attachment.

This company builds a complete line of vulcanizer equipment for tire repair including giant pneumatic truck tire molds for 6, 7, 8, 9 and 10 inch cord tires in both flat and round treads.

Their type F equipment for fabric tires only is a two-cavity outfit with self-contained steam boiler, tube plate and inside patch vulcanizer attachment.

Their improved Type E Cavity Retreading Vulcanizer, a self-contained outfit will vulcanize all makes of tires from 3-inch to 5-inch cords and fabrics.



IMPROVED TYPE A VULCANIZER OF THE AKRON RUBBER MOLD & MACHINE CO.

ABSTRACTS

Technical — General — Commercial

Tetralin as a Rubber Solvent in Rubber Substitutes

Tetralin is a hydration product of napthalene, which has been receiving considerable attention in Germany during the past few years, as a substitute for solvents ordinarily derived from petroleum. The German idea is to use those products which are made in Germany as far as possible in supplanting articles of foreign origin. In pursuing this path, the Germans have developed some interesting products and some novel uses for them. Tetralin belongs to this class of materials. There have been found uses for it in the rubber industry both as a solvent of raw and vulcanized rubber, and also in the manufacture of rubber substitutes.

Tetralin will dissolve rubber in the unvulcanized state very readily and will also take into solution vulcanized rubber of a low vulcanization coefficient. This sort of vulcanized rubber will dissolve completely. Consequently, tetralin is very well suited for making rubber cements, for dissolving rubber from old waste rubber articles, in the various rubber recovery and reworking processes, in testing cuts of rubber and in the analysis of rubber in the laboratory.

In the manufacture of rubber substitutes by the action of sulphur and sulphur chloride on different oils tetralin acts as a retarder of the reaction. The oils, such as rapeseed oil, linseed oil, poppyseed oil, cotton seed oil, castor oil, etc., are dissolved in the tetralin solvent before the treatment with sulphur or sulphur chloride. According to German Patent No. 320,807, a considerable retardation in the reaction is attained by the use of the various kinds of tetralin solvents, such as tetrahydro-napthalene, deka-hyro-napthalene and intermediate products. An essential point is that by the use of these substances the heating effect in the vulcanization reaction is reduced to a considerable degree. The danger of injuring the product by burning is removed. The quantity of tetralin that must be used depends on the nature of the oils, on the propertions of sulphur or sulphur chloride used and on the quality of the oils. The latter is of considerable importance, as well as whether the oil is used in the oxidized or non-oxidized condition. The addition of other substances, such as paraffin and mineral oils is also of consequence. For a more complete discussion of this subject, the reader is referred to *Auto-Technik* published by Klasing & Co., Berlin, and to the *Zeitschrift fuer angewandte Chemie*, 1921, page 355.

Regeneration of Old or Waste Rubber

A patent has been granted to Constantin Georgi of Germany (See United States Patent No. 1,385,869) on a process for the regeneration of rubber, in which the individual ingredients are separated out with little cost and without any mechanical comminution. This process does away with the disadvantages of the chemical process, in which valuable components such as the fabrics are destroyed and of the mechanical process in which a considerable expense is incurred in the reduction of the rubber articles to a fine state of subdivision by grinding in order to effect dissolution. In the later case the material though chemically unchanged is destroyed in a mechanical sense, in that the fibers are no longer suitable for spinning. Considerable time is spent in the treatment and high temperatures have to be used. All of these disadvantages can be removed by the use of the new process.

In this process the old or waste rubber is placed within a drum or vessel, which is provided with perforated walls. This drum turns within another drum filled with an appropriate solvent. Both drums are given a rotary motion, so that the solvent is kept moving in and out of the drum filled with rubber. The two drums may be moved in the same direction or they may be rotated in opposite directions. During this treatment, the solvent is heated to a moderate temperature through the use of steam of about two atmospheres pressure preferably. The rubber, turning within the inner drum, causes an action which draws the solvent from the outer drum within it and a prolonged and intimate contact of the rubber and the solvent is attained.

If this treatment endures long enough, the solvent will finally dissolve all the rubber and there will be obtained a rubber solution which is free from water and which is adapted to be smeared whereas the insoluable constituents of the rubber such as fibers and fabric remain unchanged within the interior of the drum. After the outer drum has been emptied, the inner drum is given a rotary motion whereby the liquid adhering to the fabric is thrown out by centrifugal force. In order to facilitate the removal of the liquid and the subsequent drying of the fibrous material, it is advisable to subject the solid material to an intermediate treatment with fresh solvent which takes up most of the regenerate solution. The rotation of the drum is continued until the material contained therein is perfectly dry and may then be subjected to mechanical treatment to render it fit for spinning and other purposes.

The apparatus is set up so that the inner drum and the outer drum, when the latter is to be rotated also, are attached to two shafts, one within the other, so that the rotation may proceed in any manner that is desired. The drums are preferably made in two parts, the upper halves being removed so that the inner drum may be filled or emptied. A valve is provided for the removal of the solution from the outer drum.

Desulphurizing Vulcanized Rubber

The principle of the process for removing the sulphur from vulcanized rubber and thereby producing a devulcanized product, as it is described in Austrian Patent No. 82,808, is one of osmotic action. There is provided a solution tank, which is jacketed so that it can be heated to the proper temperature, and which also possesses an efficient stirring apparatus. The rubber is brought into solution therein by the use of the proper solvents. A number of porous bricks or flat shapes made from a specially selected porous material are placed in the tank. These porous pieces absorb the solution of sulphur due to osmotic pressure and devulcanize the rubber in this manner.

A Water Soluble Lacquer for Rubber Sheets

A good lacquer or varnish to be used with rubber sheets is made in the following manner. The ingredients in the lacquer are cooked on a water bath with constant stirring. The composition consists of two liters of distilled water, 20 grams of tragacanth (dissolved in water), 100 grams of sal ammoniac, 250 grams of shellac, 20 grams of nigrosin or lampblack and 60 grams of alcohol. The shellac is dissolved in the alcohol and after the other materials have been thoroughly cooked, it is mixed with them.

Stripping Rubber Tires

British Patent No. 164,791 describes a machine for the stripping of rubber tires. An automobile chuck is carried at each end of a shaft which is rotated by means of a worm gear. The jaws of the chucks bear internally against the steel bands on which the tires are mounted, the first action of the shaft being to extrude the jaws and then as these grip to turn the tires. The stripping is effected by means of a knife which is fed against the tire by chain and screw gear, and an oscillating motion is given at the same time to the knife by an independent crank and connecting rod mechanism.

NEWS OF THE INDUSTRY

News -- Personals -- Financial -- Building Activities -- New Products

Firestone and Apsley Allied

Important Combination in the Rubber Footwear Manufacturing Trade—Firm to be Known as Firestone-Apsley Rubber Co.—Mr. Apsley's Announcement

Official announcement has been made by L. Dewart Apsley, president of the Apsley Rubber Co., manufacturers of rubber footwear, Hudson, Mass., of the change of name of that company to the Firestone-Apsley Rubber Co. He stated that Harvey S. Firestone, president of the Firestone Tire & Rubber Co., of Akron, Ohio, had decided that rubber boots and shoes could be manufactured more satisfactorily in New England than in Ohio and that the association of two companies was the result of Mr. Firestone's desire to find a company in the rubber footwear line with which his company could become allied.

Mr. Apsley has long been one of the prominent figures in the New England rubber trade, and product of his company has enjoyed a high reputation. In 1903-1905 he was president of the New England Rubber Club which later became the Rubber Association of America. He also served his district in Massachusetts in the Congress of the United States.

This announcement has been expected for some time as the matter has been under consideration for about two years.

No change will be made in the executive or sales personnel and Mr. Apsley, who founded the Apsley Rubber Company over 37 years ago, will continue as president.

Mr. Apsley was recently interviewed and was found very enthusiastic over the new company and its future possibilities. "Everybody knows," said Mr. Apsley, "the advanced and progressive policies of the Firestone Company. The efficiency of its manufacturing and merchandising operations have an international reputation and their cooperation will greatly assist us in advancement of the business.

"As president of the new company my every effort will be to give greater value and service to our customers. I am very sure that it is the most important step this company has taken in its more than 37 years of uninterrupted prosperity and growth.

"In Mr. Firestone I am allied with a man of progressive ideas, possessed of a broad conception of the rubber business. His vision has led to the creation of one of the largest business organizations in the country with connections extending around the world.

"It is a great satisfaction to me that Mr. Firestone, one of the greatest factors in the rubber industry, found that the Apsley Rubber Company had the basic structure for the greater Firestone-Apsley Rubber Company of the future.

"If there is one thing on which I have always insisted to the exclusion of every other consideration in the making of Apsley rubber shoes *quality* is that factor. This is indicated by the fact that there has never been a time in recent years that we could take care of all the business that has been offered us.

"Combining our knowledge with the ripe experience and enterprise which Mr. Firestone now brings us, we can promise our customers the utmost in quality and service.

"All manufacturing of rubber boots, shoes and clothing will be done at Hudson. I am convinced that as we are now organized with the united momentum of both organizations we are entering upon a period of unusual prosperity for ourselves and our present and future trade."

New President for Globe

John S. Broughton, president of the United & Globe Rubber Co., Trenton, N. J., was recently elected president of the Globe Rubber Tire Mfg. Co., Trenton in place of Dr. H. W. Kugler who left Trenton about the middle of November for England.

Horn and Sears Associated with J. C. Baldwin

James C. Baldwin, crude rubber broker, 68 Nassau street, New York, announces that Fred J. Horn, formerly of Horn & Leavitt, has joined him in the crude rubber business and opened an office in the Ohio Savings & Trust Building, Akron, opposite the Goodyear plant.

Stephen H. Sears, well known in the crude rubber trade, has also joined Mr. Sears and is located at the New York office.

New Offices for W. E. Byles

W. E. Byles, well known as a crude rubber broker and dealer in tropical produce, announces that he is now located in new offices at 100 William street, New York. Mr. Byles was one of the pioneers in selling Plantation rubber in the manufacturing trade in this country having disposed of lots of Ceylon Plantation as far back as 1909. He was connected with rubber planting in Ceylon when the business was in its infancy.

Stern Closes Chicago Office

Fred Stern & Co., the crude rubber importers of 277 Broadway, New York, have closed their Chicago office and their Western trade is now being served through their Akron office in the People's Savings and Trust Building. Clinton H. Taverniere, formerly in charge of their Chicago office, is now assisting Paul Bloom at the Akron office.

Receivers for Avalon

Ray F. Hamlin and John M. Crawford were appointed receivers of the Avalon Rubber Mfg. Co., Akron, Barberton and Sterling, Ohio, on November 19.

John Lancaster with French & Handy, Inc.

John Lancaster, formerly of Akron, Ohio, is now associated with the crude rubber firm of French & Handy, Inc., 347 Madison Avenue, New York. Mr. Lancaster was formerly connected with the crude rubber department of the Goodyear Tire & Rubber Co. for several years.

Weber Resigns from Bergougnan

E. P. Weber, general sales manager of the Bergougnan Rubber Corporation, of Trenton, N. J., announces his resignation from that organization, to take effect January 12, 1922. This action is taken in anticipation of his entrance into the tire manufacturing field, his plans and connection to be announced later. Mr. Weber is at present residing at the Sherman Hotel, Chicago, Ill.

Personal

A. F. Pond, chief chemist for The Goodyear Tire & Rubber Co. of Canada, Ltd., has been transferred to Los Angeles to succeed Burgess Darrow in similar work at the Goodyear's coast plant. Darrow returns to Akron as Development Manager of the parent company.

C. R. Heaume, formerly associated with The Mexican Crude Rubber Co. of Detroit, Mich., for four years on their plantations in The Federated Malay States, and for the last two years in their New York offices is now with G. E. Habich, Crude Rubber Broker, 24 Stone street, New York City.

Paul Ellenbogen of Fred Stern & Co., the crude rubber importers, 277 Broadway, New York, is expected back from his European trip the latter part of December. While abroad he has made an extensive tour of Germany and has visited rubber centers in other European countries.

F. A. SEIBERLING
President, Seiberling Rubber Co.

Incorporation of Seiberling Rubber Co.

Announcement was made on November 16 by F. A. Seiberling of the incorporation of the Seiberling Rubber Co. under Delaware laws with $10,000,000 capital stock. It is proposed to offer for sale 50,000 shares of preferred stock at $100 and 500,000 shares of common stock of no par value at $10 a share.

The officers of the new company are announced as follows:

President, F. A. Seiberling; vice president, C. W. Seiberling; treasurer, W. A. M. Vaughn and secretary, W. E. Palmer.

Irving R. Bailey has resigned from the Goodyear Tire & Rubber Co. to become sales manager of the new company. Harry Post will be assistant sales manager, and Harold King will direct sales personnel. William S. Wolfe will be factory manager, Karl Kilbourn manager of the development and engineering departments W. P. Keith director of laboratories, and R. C. Ellsworth, private secretary to Mr. Seiberling.

All of the officers and heads of departments in the new company were associated with Mr. Seiberling when he was president of Goodyear Tire & Rubber Co.

Announcement is made that the new company will make all sizes of pneumatic and solid tires. A new tire built on new basic principles will be put on the market.

The new company already controls the Lehigh Tire & Rubber Co. at New Castle, Pa., and the Federal Court at Cleveland has now confirmed the sale of the Portage Rubber Co. of Barberton to the new company. These two plants will give the Seiberling Company a capacity of 5,000 tires and 6,000 tubes a day, and Mr. Seiberling recently assured the RUBBER AGE that he did not at the moment expect to seek the acquisition of any more plants, although a great number had been offered to him.

The main offices of the new company are at 41 East Mill street, Akron, where they will remain for the time being.

New Jersey Zinc Company Opens Cleveland Office

To improve the service to buyers of the New Jersey Zinc Company products, the New Jersey Zinc Sales Company has opened a Cleveland office. Headquarters have been established in The Guardian Building, with R. A. Parrett, District Sales Manager, in charge.

It is understood the increasing demand for zinc products on the part of Ohio industries was a factor in prompting this move. Many paint, rubber and other manufacturers in the territory to be served by the Cleveland branch consume large tonnages of zinc oxide, albalith and other products of the New Jersey Zinc Company.

The opening of the new office recalls a statement made almost two years ago by an official of the company at the time zinc oxide production was increased. Speaking of those plans, he said: "We fully appreciate the increasing requirements of the rubber and paint industries for zinc oxide and it is our intention to provide facilities which will amply care for such needs."

Warehouse stocks have since been installed in various industrial centers throughout the United States for the convenience of pigment buyers of less than carload lots who desire prompt delivery. Cleveland and Cincinnati warehouse stocks are for prompt deliveries to the trade upon orders placed with the sales office in Cleveland.

E. V. Peters, General Sales Manager, states that the organization of this Sales Company is one of the details in the plans of the New Jersey Zinc Company to maintain the closest possible relationship with its customers, and to keep directly in touch, through the District Sales Manager with the various requirements of the trade.

Officers of the Studebaker-Wulff Co.

Stockholders of the defunct Rotary Tire & Rubber Co., Zanesville, Ohio, met at Columbus November 23 and agreed to the acquisition of the plant by the Studebaker-Wulff Rubber Co. The plan provides for the payment of the creditors in full and gives stockholders an opportunity to take stock in the new company.

The plant, which was built in 1918, is scheduled to begin operations December 1. Peter E. Studebaker, formerly of South Bend, Ind., is president of the new company. B. F. Wulff, formerly assistant district manager for the Kelly-Springfield Tire Co. both at San Francisco and Chicago, is vice president and general manager. H. C. Buchanan, formerly production superintendent of the Kelly-Springfield Tire Co.'s Akron plant, is director and superintendent and F. A. Rendon, formerly connected with the export department of the Lee Tire & Rubber Co., New York, is secretary and export manager.

New Location of Reichard-Coulston, Inc.

Reichard-Coulston, Inc., dealers in magnesia, announce that they are now located at 95 Madison Avenue, New York.

Rubber Footwear Co. for Chicago

The Servus Rubber Co. with offices in the First National Bank Building, Chicago, has been organized to manufacture and distribute canvas rubber-soled tennis and sport shoes and rubber footwear.

The capital of $500,000, is in hand and the factory, which will have an output of 5,000 pairs of rubber footwear a day, will be completed by Jan. 1.

The organization committee is composed of Judson J. Adams, formerly of the Beacon Falls Rubber Shoe Co., Beacon Falls, Conn.; Lawrence Bicely, of Thomas E. Wilson & Co.; Paul Wilder, of the Federal Securities Corporation; Attorney William T. Church; Hasbrouck Haynes, president of the Haynes Corporation, and Irvin S. Rausch.

The Mid-West's Annual Banquet

The annual banquet of the Mid-West Rubber Manufacturers' Association will be held at Chicago January 31.

IRVING R. BAILEY
Sales Manager, Seiberling Rubber Co.

E. W. Leavitt Succeeds Horn & Leavitt

E. W. Leavitt, crude rubber broker of 50 Broad street, New York, announces that he has succeeded the firm of Horn & Leavitt and that the business will be continued in New York at the same address.

May Operate Old Kelly-Springfield Plant

According to reports in Akron rubber circles, John C. Tuttle, formerly with the Firestone Tire & Rubber Company, and Marshall Morris and F. F. Dugan, formerly with the Goodyear Tire & Rubber Co., are considering the organization of a company to take over the old plant of the Kelly-Springfield Tire Co. at Akron.

R. F. Brown Treasurer of Dayton Rubber

Robert F. Brown, formerly connected with the banking firm of Weil, Farrell & Co., Boston, has been elected Treasurer of the Dayton Rubber Manufacturing Co. He will make his headquarters at the main office and factory, Dayton, Ohio.

Something about Corduroy Cords

Lz Brown Starts a Factory in his Home Town of Grand Rapids—These Tires "Climb out of Ruts"

Out in Grand Rapids, his home town, they familarly call him "Lz", and some call him "Adam", these being the two cognomens of L. A. Brown, president of the Grand Rapids Tire & Rubber Co., but whichever name his friends use carries with it a whole lot of esteem and pride in a fellow townsman who has added to the industrial life of Grand Rapids.

To outsiders it has to be explained that Lz (capital L and small z) is a christened name, and is pronounced simply by using those two not closely related letters of the alphabet.

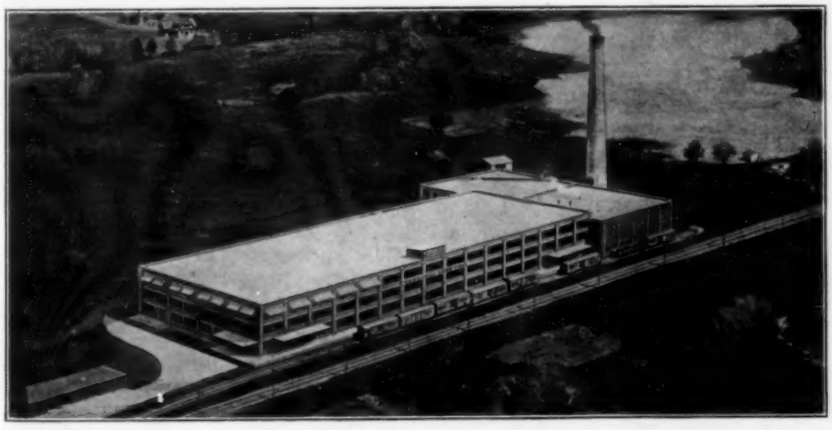
The Grand Rapids Tire & Rubber Co. is considerably less than two years old, and is already in production having been operated for three months, *and at a profit.* It was in January, 1919 that Mr. Brown conceived the idea of starting a tire factory of his own. At that time he was general manager of the Mid-Continent Tire Mfg. Co. of Wichita, Kansas, and before that he had been for a number of years district manager for the United States Tire Co. at Kansas City. He had learned the tire business thoroughly, and when he advanced the proposition of starting a factory he had attractive offers from a number of places, but his home town was the place where his heart was, and in whose favor the decision was quickly made. For during all the years he had been away from Grand Rapids, he had kept up an active interest in the affairs of that community, both by retaining property interests there, and also by conducting a motor accessories and tire business known as the Adam Brown Co.

When the company was organized his lifelong friends and neighbors came to his support loyally so that practically all of the stock of the new tire company is held in Grand Rapids.

The plant as it stands today has a capacity of 500 tires per day and is regarded as one of the best equipped plants in the entire industry. An artificial lake covering eight acres furnishes an abundant water supply and makes it possible for them to generate their own electricity at a very low rate.

The factory is devoted entirely to Corduroy Cord tires and tubes. The Corduroy cord is known as the tire that "Climbs out of the ruts". It is equipped on each side with corrugations that make it possible actually to do what their slogan says, "climb out of the ruts". This is a selling point that has given the Corduroy a real vogue with those who have become acquainted with it.

It is an evidence not only of the merit of the tire, but also of Mr. Brown's standing in Grand Rapids that no less than 33 tire dealers and distributors in that city are now carrying complete stocks of Corduroy Cords. Eight traveling men are carrying the Corduroy message to all parts of the counrty.



AIRPLANE VIEW OF FACTORY OF GRAND RAPIDS TIRE & RUBBER CO.

Claims Made for Falor Seamless Tubes

Officials of the Falor Manufacturing Co. on South Street, Akron, Ohio, report good demand for their seamless tubes and state that they are operating at capacity. This is the plant taken over last summer by Shelby Falor, formerly of the Goodyear Tire & Rubber Co. Because of his popularity and life-long connection with the rubber trade he has a host of friends who will rejoice to know of his success in his new business.

In an interview with a representative of RUBBER AGE Mr. Falor had the following to say about tubes by the new process:

"The Falor tube is not of the laminated construction. It is built by the special process made possible by our own machinery—a new process impossible except through our patents. Laminated construction has now been superseded by our method, the advantages of which are many.

SHELBY A. FALOR
President, Falor Mfg. Co.

"The Falor method builds a tube complete without a seam. Foreign manufacturers have made tubes in this manner for years. But American manufacturers never have been able to adapt this system to quantity production demanded in this country, because certain curing difficulties could not be overcome. These manufacturers, nevertheless, conceded it to be the best way to build tubes.

"These difficulties have now been surmounted in the Falor machine by means of special water jackets for cooling, and other improvements which allow seamless tubes to be made with an absolutely uniform cure and finish.

"It is this machine that, to a large extent, is responsible for the perfection in Falor Tubes. Our customers throughout the country testify to the satisfaction they are giving almost all users.

"Almost every car owner has had a tube rip and tear 12 or 14 inches when a blow-out occured. Such a tube is beyond repair and is a dead loss. Rubber has a tendency to run and flow with the grain when put through the calender. This fault cannot be corrected when tubes are made in the ordinary way. Our tube machine crosses the grain in the rubber as it flows through the coils. So Falor tubes will not rip when blown out.

"The one big difficulty which has stood in the way of the manufacture of seamless tubes by machinery has been completely overcome in our process. That is the removal of dirt, grit and foreign substances in the compound. If allowed to stay in the compound and get into the finished product they create weak spots that eventually blow out or leak. Now all chance of any such particles getting into the finished Falor tube has been eliminated by the special dies in the head of the Falor Tube Machine, and covered by our patents. If a small foreign substance, even the size of a pin head, flows through these dies, and embeds in the warm rubber,

it is apparent at once to the operator, and the particle is removed.

"Another unusual feature found in Falor Tubes is that they are of uniform thickness all around."

E. H. Fitch Manager of the Republic

C. H. Booth receiver of the Republic Rubber Corporation, Youngstown and Canton, Ohio, has received permission from the Federal Court to operate both the plants for one year.

Soon after this order was issued Edward H. Fitch of Akron was engaged as general manager. Mr. Fitch resigned from the Diamond Rubber Co., and took up his new duties the middle of November. He is a graduate of Cornell University and for seven years was district manager of the Standard Oil Company with headquarters at Akron before he became connected with the rubber business. He joined the Diamond Rubber Company organization and was district manager of the Philadelphia division for 14 years. This division operated from Philadelphia to New Orleans. When the offices of the Goodrich and Diamond divisions were consolidated at Philadelphia, Mr. Fitch was placed in charge.

For the past three years he has been manager of sales to automobile manufacturers for the Diamond division with headquarters at Akron. In June, 1920, he was appointed Director of Sales of the Diamond Rubber Company covering tires and mechanical goods.

J. H. Conners, for the past 15 years in charge of mechanical sales for the B. F. Goodrich Co. in the Boston district, on November 19 was appointed manager of mechanical sales for the Republic Rubber Corporation. For several years he was manager of mechanical sales in Philadelphia under Mr. Fitch. Following his service at Philadelphia he was manager of mechanical sales of the Diamond division of the B. F. Goodrich Company for the central district, and had completed 21 years with the Goodrich and Diamond companies.

Raymond W. Kent of the Canton plant is now in charge of production at both plants. L. T. Peterson resigned some months ago.

R. L. House who was export manager with headquarters in New York has been appointed manager of the Philadelphia branch and warehouses.

C. W. Hardin formerly manager of mechanical goods sales in New York, and afterward located in the South for a time, is now manager of sales to Eastern railways and is located at the New York branch, 221 West 37th street.

EDWARD H. FITCH
Recently Appointed General Manager of the Republic Rubber Corporation

J. H. CONNERS
Recently Appointed Manager of Mechanical Sales of the Republic Rubber Corporation

Crepe Rubber Sport Shoes

Quite by accident plantation crepe rubber in practically the crude state, has been tried out for rubber soled shoes. Englishmen playing tennis on rubber plantations were astonished to find that they got much better wear from crepe rubber soles than they did from those which had been put through the vulcanized process.

As soon as this report reached London, considerable interest was expressed in rubber circles; an exhibit of this type of sole was given prominence at the Rubber Exhibition held in London during the summer, and a well known Mincing Lane merchant took the matter up and has had further samples made up for trial.

The shoes present an attractive appearance as the rubber is of bright golden color, with corrugated surfaces. It is said that aside from giving additional wear, the soles are exceptionally resilient having about ten times as much rubber in them as the ordinary vulcanized rubber sole. The Mincing Lane merchant who is promoting this new project has ordered from Ceylon considerable quantities of cut soles and specially prepared rubber to be cut in London. Not all blanket crepe rubber will do for shoe soles, as the rubber must be closely knit and gristly.

While shoes equipped with this new type of sole have not thus far proved to be as cheap as the standard vulcanized shoe, it is the opinion of the promoters of the project that as soon as the new soles are made in quantity, they can be sold at a price not very much higher than a good grade of standard soles.

The promoters of the project describe the matter from the producers point of view as follows:

> Either the rubber can be prepared in suitable form and texture for soles on the Estates to be cut here by the manufacturers or the soles can be cut to size on the Estates. In the first instance there is the unavoidable waste which, when disposed of, would realize a few pence below uncut rubber. In the second, by cutting the soles on the Estate the waste can be remilled and cut out again into more soles. Also it is cheaper with native labor to cut the soles than to have them done here, also there is a saving in freight. As to machinery, we have been in communication with one of the oldest firms of rubber machine manufacturers in the country, and one which makes a specialty of sole cutting appliances. We have a supply of leaflets giving illustrations and full details as to price, delivery, etc., and shall be very happy to supply copies to anyone interested. These little machines can be driven by very little power in existing factories and no special qualification is necessary to the operator.

The Mid West's November Meeting

The regular meeting of the Mid-West Rubber Manufacturers' Association was held at the Hotel Morrison, Chicago, on November 8 President W. W. Wuchter of Omaha occupying the chair. Twelve Regular members and several Associate members were in attendance. H. C. Gardner, president of the Great Lakes-St. Lawrence Tide Water Association gave an interesting talk on the deepening of the St. Lawrence River and the supreme importance to Chicago of bringing ocean shipping to the waters of Lake Michigan. This would make the City on the Lake-front the principal port in the United States, he thought.

The appointment of Charles S. Sutherland as secretary and general manager of the association was announced to succeed J. P. Matthews resigned. Mr. Sutherland was formerly with the Rubber Association of America in New York, and has been connected with the Mid-West since April, 1920.

The next meeting of the association will be held on December 13.

MARKETS

Crude Rubber

NEW YORK, NOVEMBER 23, 1921

Trading in crude rubber in the New York market has maintained a strong tone during the past two weeks in spite of the fact that the demand from the manufacturing trade has not been very strong. Prices in primary markets have strengthened considerably and this has been reflected locally.

Prices on spot ribs moved up from 17½ cents to 19 cents the middle of the month and then receded from ¼ cent to ½ cent. At the present writing the quotations are from 18½ cents to 18¾ cents. First Latex grades still remain about ¼ cent under ribs.

There is a good deal more of an interest in futures developing from month to month as the manufacturing situation clears up, and while this has not yet had any appreciable effect on prices, sharp rises in this direction are looked for before very long.

The appointment of a Commission by the British Government to investigate thoroughly the entire rubber situation in primary markets has contributed to the firmness that has been evidenced both in Singapore and London. All factors in the trade are awaiting with interest any recommendations this Commission can formulate. This is of special interest in view of the refusal on the part of the British Government to restrict output or prices of crude rubber, and the reported failure of the restrictions on production that was attempted by the various planters' associations. Stocks in London early in the month were reported at 69,257 tons as compared with 41,751 tons a year ago.

Current quotations on standard grades are as follows:

Plantations			
Ribbed Smoked Sheets spot	.18½	@	.18¾
December	.18½	@	.18¾
Jan./March	.19½	@	.19¾
Jan./June	.20¼	@	.20½
April/June	.20¾	@	.21
July/Dec.	.22⅛	@	.22½
July/Sept.	.21½	@	—
July/December	.22½	@	—
Jan./December	.21	@	—
Smoked sheets plain, spot	.16¾	@	.17
First Latex Pale Crepe, spot	.18¼	@	.18½
December	.18¼	@	.18½
Jan./March	.19¼	@	.19½
Jan./June	.19¾	@	.20
April/June	.20¼	@	.20½
July/Sept.	.21½	@	—
July/Dec.	.22½	@	—
Jan./Dec.	.21	@	—
Amber Crepe No. 1	.17½	@	—
" " " 2	.17	@	—
" " " 3	.16¾	@	—
Grand Central Crepe	.16	@	.16½
Clean Thin Brown Crepe	.16½	@	—
Light Clean Thin Brown	.16¾	@	—
Rolled Brown Crepe	.15¼	@	—
Paras			
Maderia Fine	.24	@	.24½
Acre Fine	.24	@	.24¼
Up-river Fine	.23	@	.23½
Up-river Medium	.21	@	nom.
Up-river Caucho ball	.13	@	nom.
Up-river Coarse	.15	@	—
Islands Fine	.21	@	—
Islands Coarse	.10	@	.10½
Cameta	.10½	@	—
Xingu Ball	.12	@	—
Tapajos fine, spot	.21	@	—
Pontianac			
Prime Pressed	.11½	@	—
Plantation	.06¼	@	—
Bangermassin	.07⅝	@	—
Palembang	.09¾	@	—
Siak Gutta Percha	.16⅛	@	—
Prime Macassar	2.60	@	—
Balata			
Panama Block	.25	@	.40
Surinam Sheets	.63	@	.64
Columbia Block	.34	@	.41
Venezuelan Block	.54	@	.54½

Reclaimed Rubber

NEW YORK, NOVEMBER 21, 1921

This market is unchanged during the past fortnight.

Quotations are nominally as follows:

Standard Reclaims			
Floating	$.12	@	$.13
Friction	.12	@	.13
Boots and Shoes	.10	@	.10½
Boots and Shoes (washed	.13	@	.14
Mechanical	.08	@	.10
Hose	.10½	@	.11½
Tires, truck	.08	@	.09
Tires, auto	.09	@	.10
White	.13	@	.14

Scrap Rubber

NEW YORK, NOVEMBER 21, 1921

No change has been noted in the scrap rubber market during the past fortnight, and prices remain unchanged.

Quotations are nominally as follows:

Auto tire peelings	.01⅛	@	.01⅜
Standard White auto	.01	@	.01⅛
Mixed auto	.00⅝	@	.00¾
Bicycle tires	.00½	@	.00¾
Solid truck tires	.00¾	@	.01
Boots and Shoes	.02⅛	@	.03⅝
Arctics, trimmed	.01⅝	@	.01¾
Arctics, untrimmed	.01⅛	@	.01¼
Inner tubes, No. 1	.03¾	@	.04
Inner tubes, compounded	.02	@	.02¼
Battery jars, black compounded	Nominal		
Batteryjars, No. 1 bright fracture	"		
Inner tubes, red	.02	@	.02⅜
Heels and pads	Nominal		
Black mixed	.00¼	@	—
Garden hose	.00½	@	—
Air brake hose	.00½	@	—
Red packing	.01½	@	.01¾
Red mixed rubber	.02	@	—
White mixed rubber	.01¾	@	—

Cottons, Yarns and Fabrics

NEW YORK, NOVEMBER 21, 1921

At this writing the cotton market is beginning to recover from the sagging prices of the week previous, and displays considerable more evidences of snap and returning interest. Prices are advancing again due partly to the ginning report of 7,270,575 bales for the year 1921 up to November 14 as against 8,914,642 on the same date last year, 7,604,320 in 1919 and 8,706,420 in 1918. Previous estimates had been for 7,300,000 bales so the actual figures fell something short of that.

The bullish aspect of the market is also strengthened by the views entertained by many that the world's consumption of American cotton will very possibly be 13,000,000 bales.

The peak of the crop movement appears to have been reached, but the receipts at primary sources continue larger than generally expected notwithstanding the presistent reports that fully 90 per cent of the crop has been gathered and a large part already marketed.

Some of the important interests in the cotton market believe there will be quick recovery, should there be any further break and that cotton bought around the present level will ultimately prove very profitable with rather small chances of any serious loss.

All interests have their eyes fixed on the Disarmament Conference in Washington as offering the greatest hope of the day to business not only in this country, but throughout the world.

The following are the closing highest and lowest prices as of November 21:

	Closing	High.	Low.
Nov.	*17.30a.....	.....	.....
Dec.	17.38a17.39	17.59	17.20
Jan.	17.25a17.30	17.45	17.07
Feb.	*17.24a.....	.....	.....
March	17.22a17.25	17.46	17.10
April	*17.08a.....	.....	.....
May	16.95a16.98	17.15	16.75
June	*16.75a.....	.....	.....
July	16.57a.....	16.68	16.40
Aug.	*16.30a.....	.....	.....
Sept.	*16.00a.....	.....	.....
Oct.	15.67a.....	15.80	15.55

Market— Steady.
Trans— 17.30

*Nominal

LIVERPOOL, Cables of Nov. 21—Spot in good demand with improved business; prices steady. American middling fair, 12.97d; good middling, 11.27d; fully middling, 10.87d; middling, 10.47d; low middling, 9.17d; good ordinary, 7.42d; ordinary, 6.67d. Sales 7,000 bales, including 4,900 American. Receipts, 29,000 bales, including 20,100 American. Futures closed steady.

EGYPTIAN COTTON

We have the following from Alexandria, under date of October 28, 1921.

"This week commenced with the same depression which characterized last week's market. Bullish speculators sought to rid themselves at any cost of their positions. Failures on the part of some

brokers of minor importance, who found difficulty in providing for the weekly settlement, added to the uneasiness. Selling by banks eager to hedge their clients' cotton aggravated matters further. Fortunately the advance in the American market came as a stimulus checking the unreasonable decline. Purchases by the trade contributed to improving the situation. The technical position seems to have been fairly well cleared and we expect Egyptian cotton will soon settle down to a reasonable premium over American.

"Arrivals continued very heavy and stocks have increased to the enormous figure of 2,139,264 cantars. However, this is shortly expected to drop considerably because purchases in the interior were suspended as a result of weak markets and heavy exports are expected during the month of November.

"SPOT. The demand has been fairly good for low grade Sakellarides. Fine staple high grades were in good demand at high premiums. Uppers which are being bought by America are also greatly in demand.

"CROP. The final Government estimation is expected shortly and rumors have it to be 3 to 3½ million cantars."

ALEXANDRIA

Statistics issued by the Alexandria General Produce Association for the week ending October 28, 1921, are as follows:

	Receipts Alexandria Cantars	Exports in Bales to England	Continent	America	Total Exports Cantars	Stock Alexandria Cantars
This week	306,106	10,639	5,038	5,762	164,015	2,139,264
Same week 1920	141,073	4,702	1,916	50	50,981	936,360
" " 1919	233,741	16,813	3,265	350	156,361	1,202,826
Since 9/1/1921	1,423,509	66,608	43,946	36,433	1,119,245	..
Same time 1920	898,708	23,959	12,284	1,804	290,640	..
" " 1919	1,566,495	82,023	12,941	11,416	806,669	..

Sakel November closed at 42.10 against 45.80 last week.
" January " " 43.00 " 46.55 " "
" March " " 43.50 " 47.00 " "
Upper December " " 32.25 " 35.50 " "
" February " " 33.00 " 36.25 " "

By cable from Alexandria October 31: Government estimate crop 3,300,000 cantars.
By cable from Alexandria November 22: Alexandria Futures closed today as follows, December 28½, January 38¼.

TIRE FABRICS

The demand for tire fabrics during the past fortnight has been small—in fact the market is described as "very, very dull." The mills that weave these fabrics are waiting to ascertain the final outcome of the cuts in tire prices which have been in progress throughout November in the tire industry.

One important factor in this trade said: "We note tire prices are coming away down, but whether or not they will be justified remains to be seen. Fabric is low at present, but I do not think it will remain so very long."

Current quotations on standard fabrics follow:

TIRE FABRICS (Square Woven)

17¼-ounce Egyptian uppers, combed, lb.	.75	@	.80
17¼-ounce Egyptian uppers, carded, lb.	.70	@	.74
17¼-ounce Sakellarides, combed, lb.	.85	@	.90
17¼-ounce Sakellarides, carded, lb.	.75	@	.80
17¼-ounce Peelers, combed, lb.	.75	@	.80
17¼-ounce Peelers, carded, lb.	.50	@	.58

CORD FABRICS

Combed Sakellarides lb.	.85	@	.95
Carded Sakellarides lb.	.80	@	.85
Combed Peeler lb.	.80	@	.85
Carded Peeler lb.	.60	@	.63
Combed Egyptian uppers lb.	.80	@	.85
Carded Egyptian uppers lb.	.75	@	.79

SHEETINGS, DUCKS AND BURLAPS

The cloth markets have been listless during the past fornight with no particular trading in sight and little change in price over our last report. Whatever change has been noted was in downward revision.

Current quotations are as follows:

DUCKS

Belting (pound basis) lb.	.39	@	—
Hose (pound basis) lb.	.39	@	—
Enameling lb.	.39	@	.46
Shoe Ducks lb.	.40	@	—
Single filling yd.	.16	@	.20
Double filling yd.	.19½	@	.21

DRILLS

37-inch 3.25-yard yd.	.09¼	@	—
37-inch 2.75-yard yd.	.11½	@	.12
37-inch 3.00-yard yd.	.11	@	—
37-inch 3.50-yard yd.	.10¼	@	—
37-inch 3.95-yard yd.	.09¼	@	—

OSNABURGS

30-inch 7-ounce	.08¼	@	.08½
40-inch 7-ounce	.10½	@	.11½

SHEETINGS

40-inch 2.50-yard yd.	.13	@	.13½
40-inch 2.85-yard yd.	.11¾	@	—
40-inch 3.15-yard yd.	.13	@	nom.
40-inch 3.60-yard yd.	.11½	@	—
40-inch 3.75-yard yd.	.09¾	@	.10
40-inch 4.25-yard yd.	.11¼	@	—

BURLAPS
(Carload Lots)

7 -ounce 40-inch yd.	3.80	@	—
7½-ounce 40-inch	3.75	@	3.80
7½-ounce 45-inch	4.55	@	—
10 -ounce 40-inch	4.75	@	4.85
10 -ounce 36-inch	4.85	@	—
8 -ounce 40-inch	3.80	@	3.85
10 -ounce 45-inch	6.15	@	—
10½-ounce 40-inch	4.85	@	4.90

New Incorporations

NEW YORK

Fred Stern & Co., to deal in rubber and gutta percha. $1,000,000. Incorporators: F. Stern, P. Ellenbogen, L. H. Heyworth, Attorney, J. S. Kane, Manhattan.

Ernest F. Kling, Batavia, Genesee Co., to manufacture tires. $50,000. Incorporators: E. Kling, E. F. Kling, W. S. Kane. Attorney, J. A. Laseur, Batavia.

Durant Tire & Rubber Co. $30,000. Incorporators: G. Young, A. Knopfer, R. Weiss. Attorney, H. H. Oshrin, 1476 Broadway, New York.

Eagle Garage and Auto Supply Co. $10,000. Incorporators: R. Heinze, O. Brammer. Attorney, I. Konigsberg, 114 Liberty Street, New York. Principal office, Brooklyn, New York.

Weinberg Auto Repair Co. $10,000. Incorporators: M. F. and M. and H. Weinberg. Attorney, S. Isaacs, 266 Grand Street, New York.

Hanis Shoe and Rubber Co. $10,000. Incorporators: H. Goldstein, I. Rothman, F. Juster. Attorney, A. I. Farb, 2 Rector street, New York.

Paraflex Rubber Corporation. $30,000. Incorporators: O. L. Gonzales, A. W. Palmer, V. A. Roberts. Attorney, Merrell, Bates & Topping, 27 Cedar street, New York.

DELAWARE

Paramount Rubber Consolidated. 20,000 shares of preferred stock, par $100; 40,000 shares of common stock, no par. Agent, W. P. Harrar, 120 West 32nd Street.

Braender Rubber & Tire Co., to manufacture tires. $1,100,000. Attorney, Corporation Trust Co. of America, Wilmington, Delaware.

Corona Manufacturing Co., to manufacture rubber goods, etc. $10,000. Incorporators: T. L. Croteau, M. A. Bruce, C. H. Maxwell; all of Wilmington, Delaware. Attorney, Corporation Trust Co. of America.

Century Plainfield Rubber Co., to manufacture tires. $50,000. Incorporators: A. Grant Armstrong, Mosley, Virginia; Helen McInerny New York; Mary B. Kennelley, Port Chester, New York. Attorney, Clifford V. Mannering, Wilmington, Delaware.

Kleenkap Co. of America, to deal in automobiles and supplies. $150,000. Attorney, Corporation Trust Co. of America, Wilmington, Delaware.

Tri-State Tire Corporation. $100,000. Attorney, Corporation Service Co., Wilmington, Delaware.

Old Hickory Tire Co., to manufacture automobile tires. $2,000,000. Principal office, Wilmington, Delaware.

CONNECTICUT

Connecticut Hard Rubber Co. of New Haven. $10,000. Incorporators: Albert A. Smith and William Baxter of New Haven and John A. Moffitt of New York.

INDIANA

Long-Wear Tire and Rubber Co. of Indiana, to manufacture rubber products. $300,000. Incorporators: B. B. Benner, Charles Kneiss, D. C. Hobbs, E. E. Carter, A. E. Disher, Albert Anderson, Ernest Bond, Nathan Ridgeway, W. S. Moffit.

Indianapolis Metal and Salvage Co., to trade in iron, metal, rubber etc. $10,000. Incorporators: F. W. Smith, Louis. Santow, M. C. Robinson.

American Rubber Patents

ISSUED OCTOBER 25, 1921

1,393,909—To Joseph Saulsberry, Peoria, Illinois. Cushion tire.

1,394,400—To Andrew P. Berg, Station Island, N. Y. Rubber tire setter.

1,394,069—To Frederick S. Dickinson, New York, N. Y., and John Springer, Bradley Beach, N. J., assignor to said Dickinson. Method of constructing pneumatic tires.

1,393,998—To William H. Fulton, Irvington, N. J. Manufacture of tires.

1,395,036—To Thomas A. Burns and David J. Huether, Toronto, Ontario, Canada, assignors to Dunlop Tire and Rubber Goods Company, Ltd., Toronto, Ontario, Canada. Apparatus for solutioning tire beads.

1,394,589—To Benjamin C. Swinehart, Akron, Ohio. Cushion-tire.

1,395,205—To William H. Parham, Knoxville, Tenn., assignor to Parham Auto Patents Corporation, Knoxville, Tenn. Vehicle tire fastener.

1,395,055—To William B. Harsel, Akron, Ohio and Edward Nall, deceased, by Edith Alice Nall, executrix, Akron, Ohio, assignors to The Goodyear Tire and Rubber Co., Akron, Ohio. Tire making machine.

1,395,183—To William B. Harsel, Akron, Ohio and Edward Nall, deceased, Akron, Ohio; Edith Alice Nall, Cuyahoga Falls, Ohio, executrix of Edward Nall, assignors to The Goodyear Tire and Rubber Co., Akron, Ohio. Tire making machines.

1,394,547—To William E. Greer, Syracuse, N. Y. Tire Mold.

1,394,787—To Winfield P. Porter, New York, New York. Pneumatic Tire.

1,395,162—To Pearl E. Stroud, South Heart, N. D. Tire protecting casing.

New Rubber Machinery Catalogue

David Bridge & Co., Ltd., of Castleton, Manchester, England, are circulating among their customers in the United States a new catalogue of modern machinery for the rubber gutta percha, balata, celluloid and cassin industries. Running to over 130 pages, well bound, copiously illustrated and artistically printed, this catalogue covers a great deal of ground. Of necessity the descriptions of individual machines are brief and do not go into detail, but supplementary leaflets giving full information will be supplied to manufacturers on application.

Chemicals and Compounding Materials

THE GENERAL MARKET—NOVEMBER 23, 1921—The demand from the rubber trade for the various lines of chemicals and compounding ingredients has been uncommonly good throughout the month of November. Reports from the various dealers are to the effect that tire manufacturers particularly are taking more supplies than for many months. The other branches of the trade also are sending forward inquiries and orders in greater volume. There have been few changes in prices since our report of early November, but a stiffening in the market is looked for if the demand from business in general continues.

ACCELERATORS

Organic

Aldehyde ammonia, crystals	lb.	$ .95 @	1.00
Aniline oil, bulk basis,	lb.	.18 @	.26
Excellerex,	lb.	.55 @	.65
Formaldehyde-aniline	lb.	.50 @	.55
Hexamethylene-tetramine (powdered)	lb.	.75 @	.80
Paraphenylene-diamine	lb.	1.70 @	1.75
Thiocarbanilid	lb.	.35 @	.40
Vulcocene	lb.	.. @	..

Inorganic

Lead, dry red, bbls.	lb.	.10 @	—
Lead, sublimed white	lb.	.07 @	—
white, basic carbonate	lb.	.06½ @	.07¼
Litharge, commercial, bbls.	lb.	.07½ @	.07¾
Lime, hydrated	lb.	.03 @	—
Magnesia, calcined, extra light	lb.	.50 @	.55
heavy	lb.	.06 @	.07
Magnesite, powdered	ton	50.00 @	65.00

COLORS

Blacks			
Bone, powdered	lb.	.05½ @	.07½
Carbon black	lb.	.10½ @	.20
Drop	lb.	.07½ @	.16
Ivory	lb.	.15 @	.45
Lampblack	lb.	.17 @	.45
Blues			
Prussian	lb.	.50 @	.60
Ultramarine	lb.	.15 @	.35
Cobalt	lb.	.27 @	.35
Rubber maker's blue	lb.	3.50 @	—
Browns			
Iron oxide	lb.	.04½ @	.05½
Sienna, Italian, raw and burnt	lb.	.06 @	.07
Umber, Turkey, raw and burnt	lb.	.05½ @	.06½
Greens			
Chrome, light, c. p.	lb.	.30 @	.32
medium	lb.	.35 @	.36
dark	lb.	.36 @	.45
oxide	lb.	.50 @	.60
Reds			
Antimony, crimson	lb.	.40 @	.45
golden	lb.	.21 @	.25
red	lb.	.23 @	—
Indian, pure	lb.	.08 @	.14
Oxide, copperas, pure	lb.	.14 @	—
reduced	lb.	.11½ @	.12½
Para toner	100 lb.	1.40 @	—
Toluidine tone	lb.	2.50 @	2.75
Tuscan	lb.	.17½ @	.30
Venetian	lb.	.02½ @	.05
Vermillion, English, quicksilver	lb.	.80 @	.85
domestic	lb.	.25 @	.30
Whites			
Albalith	lb.	.06 @	.06½
Aluminum bronze	lb.	.60 @	.65
Lithopone, Beckton white	lb.	.06 @	.06½
Lithopone, domestic (factory)	lb.	.06 @	.06½
Zinc oxide, American Horse Head Special	lb.	.08 @	.08½
XX red	lb.	.07½ @	.08
Zinc oxide, French process, White seal	lb.	.11 @	.11¼
Green seal	lb.	.09¾ @	.10¼
Red seal	lb.	.08¾ @	.09¼
Yellows			
Cadmium sulphide	lb.	1.25 @	1.50
Chrome, light, c. p.	lb.	.18 @	—
dark	lb.	.18 @	—
medium	lb.	.18 @	—
Ocher, French	lb.	.02½ @	.03½
domestic	lb.	.02 @	.03
Zinc chromate	lb.	.33½ @	—

COMPOUNDING INGREDIENTS

Aluminum flake	ton	.29½ @	—
hydrate	ton	22.00 @	25.00
Ammonium carbonate, powdered	lb.	.06 @	.09
Barium dust	ton	100.00 @	—
Barytes, Southern off-color	ton	15.00 @	17.00
Western, prime white	ton	23.00 @	—
Basofor	lb.	.04 @	—
Beta-naphtol, technical	lb.	.33 @	—
Blanc fixe, dry, f.o.b.works	lb.	.03½ @	—
Chalk, precipitated, extra light	lb.	.03½ @	.04¼
heavy	lb.	.02½ @	.03¼
Clay, China, domestic	ton	7.50 @	9.00
imported	ton	16.00 @	24.00
Dixie	ton	22.00 @	35.00
Blue Ridge	ton	22.00 @	32.00
Fuller's Earth, powdered	ton	22.00 @	25.00
Fossil flour	ton	60.00 @	..
Glues, extra white	lb.	.30 @	.40
medium white	lb.	.22 @	.28
cabinet	lb.	.18 @	.32
cabinet low grade	lb.	.15 @	.18
common bone	lb.	.09 @	.14
Graphite flake, bbls.	lb.	.10 @	—
powdered	lb.	.05 @	—
Ground glass, fine	lb.	.03½ @	.04
Infusorial earth, powdered	ton	60.00 @	—
bolted	ton	65.00 @	—
Liquid rubber	lb.	.15 @	—
Rotten Stone	lb.	.02½ @	.04½
Silica (aluminum)	ton	23.00 @	25.00
Soapstone, powdered	ton	12.00 @	—
Starch, powdered corn	cwt.	1.85 @	2.10
Talc, domestic	ton	18.00 @	20.00
French	ton	22.50 @	30.00
French, high grade	ton	40.00 @	45.00
Italian	ton	40.00 @	45.00
Terra Alba, American No. 1	cwt.	1.85 @	2.00
American No. 2	cwt.	1.25 @	..
Tripoli	ton	— @	—
Whiting, commercial	cwt.	1.05 @	1.10
Quaker	ton	13.00 @	15.00
English cliffstone	cwt.	1.60 @	2.00
glider's bolted	cwt.	1.20 @	1.35
Paris whiteAmerican	cwt.	1.30 @	1.40
Zinc Oxide— 5 per cent leaded		.07¼ @	.07¾
10 per cent lead sulphate	lb.	.07 @	.07½
20 per cent lead sulphate	lb.	.07 @	.07½
35 per cent lead sulphate	lb.	.07 @	.07½

MINERAL RUBBER

Gilsonite	ton	70.00 @	—
Genasco (c. l. factory)	ton	50.00 @	—
(l. c. l. factory)	ton	52.00 @	—
Hard hydrocarbon	ton	33.00 @	45.00
Soft hydrocarbon	ton	30.00 @	40.00
M. R. X.	ton	— @	—
Pioneer (c. l. factory)	ton	34.00 @	65.00
Raven M. R.	ton	— @	—
320 M. P. hydrocarbon (c. l. factory)	ton	50.00 @	55.00
(l. c. l. factory)	ton	57.50 @	—
300/310 M. P. hydrocarbon (c. l. factory)	ton	40.00 @	—
(l. c. l. factory	ton	45.00 @	—
Synpro, granulated, M. R. (factory	ton	59.50 @	64.00

SOFTENERS

Acids			
Acetic, 28 per cent	lb.	.02¼ @	.03
Carbolic (phenol)	lb.	.09½ @	.16
Cresylic, 97 to 99 p. c. pale	gal.	.70 @	.75
Muriatic, 20 degrees	cwt.	1.40 @	2.00
Nitric, 36 degrees	cwt.	5.50 @	6.50
Sulphuric, 66 degrees	ton	17.00 @	18.00
60 degrees, bulk	ton	11.00 @	12.00
Tartaric, crystals	lb.	.35 @	—
Alkalies			
Caustic soda, 76 p.c.	lb.	.04 @	.05
soda ash, 58 p. c.	cwt.	2.10 @	2.15
Oils			
Castor, No. 3, bbls.	lb.	.12 @	—
Corn, crude, bbls.	lb.	.09 @	.09½
refined	lb.	.11½ @	—
Chinawood, bbls.	lb.	.13½ @	.13¾
Cottonseed,	lb.	.10¼ @	—
Glycerine, c. p. drums	lb.	.14½ @	.15
Linseed, carlond spot	gal.	.70 @	—
bbls.	gal.	.72 @	—
Palm, Niger	lb.	.06½ @	—
Lagos	lb.	.07½ @	.07¾
Peanut,domestic crude	lb.	.11 @	—
Pine, steam distilled over 930° sp. gr.	gal.	.97 @	—
Rapeseed, refined	gal.	.86 @	.90
blown	gal.	.95 @	—
Rosin, first rectified	gal.	.40 @	—
second, rectified	gal.	— @	—
Tar, commercial	gal.	.29 @	.30
Soya Bean,crude,bbls.	lb.	.09 @	—
Resins and Pitches			
Cantella gum	lb.	.50 @	..
Cumar resin	lb.	.09 @	.13
Tar, retort	bbl.	9.50 @	12.00
kiln burned	bbl.	9.50 @	12.00
Pitch, Burgundy	lb.	.05 @	.06
coal tar	ton	20.00 @	—
rosin	bbl.	5.85 @	—
Rosin, grade B, ex-yard	bbl.	5.55 @	—
grade K	bbl.	6.45 @	—
Shellac, fine orange	lb.	.75 @	.80
Solvents			
Acetone, drums, c.p.	lb.	.12½ @	.13
Alcohol, denatured, No. 1	gal.	.40 @	.41
Methyl, 95 per cent, drums	gal.	.60 @	.63
Ethyl, 190 proof, bbls.	gal.	4.70 @	4.80
Benzol, 90 per cent	lb.	.25 @	.30
pure	lb.	.27 @	.40
Carbon bisulphide,	lb.	.07 @	.07¼
tetrachloride	lb.	.11 @	.13
Dimethylaniline	lb.	.40 @	.45
Naptha, motor gasoline, steel bbls.	gal.	.25 @	—
Talool, pure drams	gal.	.28 @	—
Turpentine, spirits	gal.	.76 @	—
wood	gal.	.74 @	—
Xylol, pure	gal.	.40 @	.43
commercial	gal.	.28 @	.35
Waxes			
Beeswax white, pure	lb.	.55 @	—
Caranuba, No. 1	lb.	.16 @	—
Ceresin, white	lb.	.12 @	—
Bayberry	lb.	.19½ @	.20
Montan, crude	lb.	.07 @	—
Ozokerite, hard, pure,	lb.	.25 @	—
Paraffin	lb.	.02 @	—
Petrolatum, amber, bbls.	lb.	.05 @	.05½
dark amber,	lb.	.04½ @	—

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.09 @	.16
Brown	lb.	.11 @	.15
Brown factice	lb.	.07 @	.14
White factice	lb.	.08½ @	.15½
Paragol, soft and medium	cwt.	6.81 @	—
hard	cwt.	6.81 @	—

VULCANIZING INGREDIENTS

Lead, black hyposulphite (black hypo)	lb..	.40 @	—
Orange mineral, domestic	lb.	.11 @	.13
Sulphur chloride (jugs)	lb.	.20 @	—
Sulphur flour Brooklyn brand (c.l.)	cwt.	— @	—
Brooklyn brand (l. c. l.)	cwt.	— @	—
Bergenport (c.l.)	cwt.	2.55 @	—
pure soft	cwt.	2.30 @	—
superfine (c. l.	cwt.	2.40 @	2.90

CABARRUS COTTON MILLS

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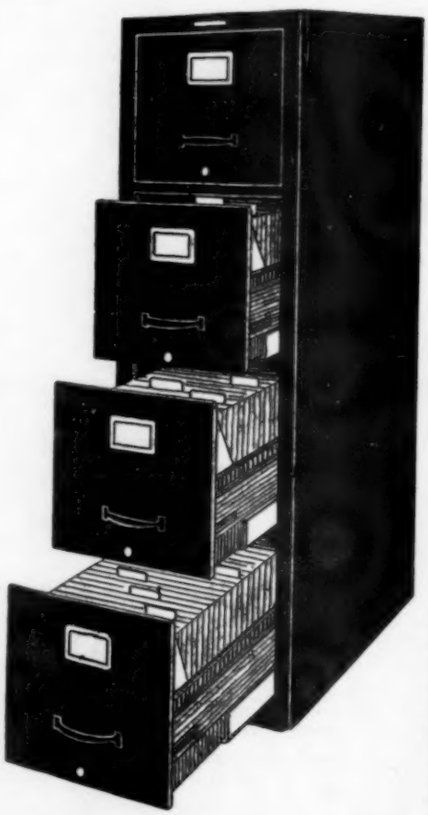

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